JOURNAL OF THE INTERNATIONAL SOCIETY FOR THE HISTORY OF ISLAMIC MEDICINE (JISHIM)

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CONTENTS

EDITORIAL

It is our pleasure to publish April/October 2020-2021-2022 Issues of the **Journal of International Society for the History of Islamic Medicine (Journal of ISHIM)**. We know that Journal of ISHIM is a scientific journal devoted to the **History of Islamic Medicine and Ethics** research and scholarship. Also, this issue like the earlier ones represents important studies in the **History of Islamic Medicine and Medical Ethics** which activate thinking and raise certain questions. So, it also tries to provide solutions to thorny and sensitive problems and the ensuing understanding helps in enlarging one's perception and intellectual horizon. The views of papers are always those of the authors, and it is important in a field like bioethics which encourages interaction and dialogue over scientific topics.

This issue contains some important scientific articles, in which, we can see and valuable original studies on **History of Islamic Medicine and Medical Ethics.** These articles are from famous scientists of many countries of the world. So, this journal helps to the development of researches on **the History of Islamic Medicine and Medical Ethics**. After papers and news of some scientific meetings are present.

Wishing April/October 2020-2021-2022 Issues of the **Journal of ISHIM**, to be beneficial to all readers and colleagues.

Editors in Chief
Dr. Aysegul Demirhan Erdemir
Dr. Abdul Nasser Kaadan

Opium - Cannabis Substitution Treatment and the State of Ecstasy in the Viewpoint of *Nidâî*

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Summary

Nidâî, a Turkish physician and poet of the 16th century, lived during the rule of Sultan *Süleyman* the Magnificent and Sultan *Selim* II. The 58th chapter of *Menâfiu'n-nas*, *Nidâî*'s known medical book written in Turkish with Arabic alphabet in 1566, is about opium and *berş* addiction. *Berş* is a paste made from cannabis leaves and opium spirit (tincture). *Nidâî* describes how substance addiction develops. However, according to *Nidâî*, the real pleasure that is longed for is divine love and people who use addictive substances that give pleasure leading to ecstasy have no dignity in the eyes of wise people. *Nidâî* claims that opium and berş addicts could easily be freed by using the replacement treatments named *bedeliyye*. *Bedeliyye* is a substitute drug that is prescribed to replace opium and *berş* intake to overcome addiction. *Nidâî* states that the medical formulation of the substitutes he invented were proven to be effective by experience. It is quite remarkable that in the first half of the 16th century, replacement therapy was used as a method to overcome opium and *berş* addiction.

Key Words: *Nidâî*, opium and cannabis addiction, substitution therapy, Ottoman medicine.

Introduction

Nidâî (1509- after 1567) is a Turkish physician and poet of the 16th century. He lived during the rule of Sultan *Süleyman* the Magnificent and Sultan *Selim* II. Limited information about his life is based on his own works. He was a member of the *Kaysûnî* family from the Ankara region and was the youngest of four brothers. During a trip to Crimea he was accepted as a teacher to *Sâhib Giray Han*. He gained a great reputation in the eyes of *Sâhib Giray* and was sent to *Süleyman* the Magnificent as a delegate. When he returned, because of the slander of his opponents who could not stand him telling to the Khan that *Nidai* claimed to Sultan *Süleyman*,*"*Do not believe in Tatar Khan, he is a traitor and ruthless to you", he was imprisoned for seven years. During this time *Nidâî* devoted himself to Sufism. After he got out of the prison, he met an elderly person from the lineage of the Prophet and received his license for medical practice by studying medicine from him. He narrates, "I came across a one-hundred-year-old blessed old man descendant of the Prophet who taught me this knowledge, delivered all of the tried medicines (*mücerrabât*) and gave certification (*icâzet*)." Master-apprentice method was a common way of medical education in the Ottoman period until the middle of the 19th century.

Nidâî's known medical book *Menâfiu'n-Nâs*, meaning *For the Good of the People*, written in Turkish with Arabic alphabet in 1566, consists of 60 chapters, each named as *bab*. In the 58th chapter of *Menâfiu'n-nas*, *Nidâî* writes about opium and *berş* addiction. *Berş* is a paste made from cannabis leaves and opium spirit (tincture) or opium and honey or sugar sauce. Addiction to and treatment of these pleasurable *(mükeyyif)* substances are discussed under the title of *bedeliyye*, meaning the substitute. He introduces replacement treatments that he claims would overcome opium and *berş* addiction.

Substance Addiction and Substitution Treatment

With minor differences in various copies[1], we find the following lines in *Menâfiu'n-Nâs*, where *Nidâî* describes how substance addiction develops:

"At the present time, some of the people who take a substance that gives pleasure to have fun with friends or because of the desire to enjoy prevails, become addicted to ecstasy (*keyfe müptelâ olurlar*). Then comes repentance, however they cannot find a way to overcome it. Their

[1] The following copies of Menâfiu'n-Nâs have been studied: Süleymaniye Library - Şehit Ali Paşa 2104, 2105; Lala İsmail 389/1; Cerrahpaşa Medical School Museum Library, No. 84, 112, 133, 318.

body becomes weak and they cannot be employed, they cannot do their job as they want, and so they need an exhilarating substance again."

Nidâî wrote that the gentry of the time went the wrong way using liquor (*müskirat*) and stimulants (*nekrât*), while others enjoyed harmful (intoxicating) substances such as opium and *berş*, straying from the right path. *Nidâî* states that, people who use addictive substances that give pleasure leading to ecstasy have no dignity in the eyes of wise people. An addict who is a man of pleasure will not be accepted to the company of the wise unless he gives up his bad habit, thus cannot not step into the circle of wisdom. Do these statements indicate that addicts were probably excluded from society?

Nidâî notes, it would be wrong to use addictive substances that are disvalued in the eye of the people of divine love who realize the language of the heart. The real pleasure that is longed for is divine love. He explains that, what is meant by ecstasy is divine love. Divine love is the way to reach Allah. *Nidâî* expresses in a verse this deep love, which he says has been going on since the existence of the world. As expressed in the poem, this eternal love is a treasure from Allah. With this love, the rose opens in the rose garden. It is not a nightingale who does not cry out there. Whoever knows the secrets of love cannot keep the secrets of this love hidden. Love can both make a person mad and also a saint (*veli*). Divine love makes some miserable for no reason, and to others the light of Allah glorifies. When someone's love reaches the level of madness, he becomes disgraced among people in the world. First of all he forsakes the sense of shame and honor; he holds the skirt of love tightly with his heart. As the fire of love increases, he attains whatever he wants with the help of love. He who drives away the ignorance in his heart with love discerns and recognizes those who are aware of love wherever they are. A person who tastes the full flavor of this love becomes one of those who are loving and generous in both worlds and is respected. Those being amazed and admired by drinking from the cup of love in the dervish lodge of saints, understand the secrets of love and are in ecstasy, for the real pleasure is the eternal love of Allah. *Nidâî* expresses that liquor gives only a momentary pleasure.

Nidâî explains that, it's easy to give up all kinds of delights, but it is difficult to be cut off from opium and *berş*, but not impossible. Now, those who wish to be freed of this addiction and want to drink the sip of love from the hand of the murshid, a spiritual guide, in the assembly held in the name of Allah and be ecstased forever, can easily be freed by using the following replacement treatment, the *bedeliyye*. *Bedeliyye* is a substitute drug that is prescribed to replace opium and *berş* intake to overcome addiction. *Nidâî* states that the medical formulation of the substitute drug for opium prescribed in his book *Menâfiu'n-Nâs* is his invention and the effect of the drug was experienced again and again. He notes, "It is the substitute drug formulation to overcome opium addiction that I, the *fakîr* (poor dervish), invented myself. I have easily stopped many people from opium addiction, experiencing it many times." In *Nidai*'s own words, the composition and the administration of the substitute drug was "invented by his intellect". The prescription and way of administration of *Nidai*'s substitute drug is below:

"Opium, great hemlock root**,** pellitory**,** licorice honey**,** helleborus 32 grams[2] each; spurge 9.6 grams; sweet flag and ginger 9.6 gram**s** each; cloves 3.2 grams; gummi arabicum 96 gram**s.** Make pills the size of chickpeas. Cut off the amount of opium the addict eats as much as one substitute pill and he should take three of the substitute pills to compensate this. However, he shall also take the reduced amount of opium he was used to take. Three days later, opium intake is again reduced as much as one substitute pill. The next day the same amount of opium is reduced once more. After two days, opium as much as one substitute pill is reduced again and instead three of the substitute pills are taken in its place." *Nidai* says, "Let him take three pills of this substitute in exchange for one amount of opium (equal in amount to one substitute pill) he left. In this way, it is possible to easily overcome the addiction of a person who consumes ten dirhams (32 grams) a day. It has been experienced." According to *Nidâî* 's formulation the amount of opium that the addict was used to consume is not cut suddenly, but its amount is reduced gradually, replaced by the substitute pills containing an amount of opium.

Another substitute drug (*bedeliyye-i berş*) is also formulated by *Nidâî* to treat those addicted to the *berş*. It also gives people illusionary joy and energy. *Nidâî* notes, "The quality, color and taste of this substitute drug resembles *berş*. A man who is impotent as a result of consuming *berş* starts to achieve an erection. It turns the face red, stops coughing, makes smarter and will make more intelligent, capable of having better conversations during chat." *Nidâî* informs that he himself also discovered the following substitute drug for the treatment

[2] The weights of the ingredients are given by the weight measure called *dirhem*. One *dirhem* is 3.20 grams. In this text, *dirhem* measurements are given by converting to grams.

of *berş* addiction and that he saved many people from this disturbance. The way of administering the substitute of *berş* and its composition is as follows:

"The addict should take for five to ten days the substitute drug as much as the same amount of the *berş* he was used to consume. Afterwards he would not have desire to use *berş*. If he later consumes *berş* for once because the desire for pleasure prevails or engagement in conversation, but doesn't use it for a second time, it's not harmful. Don't compare this substitute drug with others because it's my invention, the composition of the drug belongs to me. I freed many people from *berş* addiction and I experienced it many times. The prescription of the substitute drug is, saffron 6.4 grams, mastic 16 grams, harmala 320 grams, opium 16 grams, spurge 6.4 grams, pellitory 16 grams. Give the consistency of *berş* with defoamed filtered honey the double weight of these ingredients and keep it in barley for a month within a ceramic pot. Use it when the time comes."

An additional piece of information in the margin of the copy numbered 133 registered in *Cerrahpaşa* Medical School Medical History Museum also caught our attention. A drug composition is given for the treatment of the *tiryâkî* under the title of "The substitute (*bedeliyye*) composition of the deceased *Ahmed Paşa*". Who is this late *Ahmed Paşa*? We don't know. *Tiryâkî* is the term used to identify those who are fond of an addictive substance. As far as we understand, an owner of the manuscript provides this additional information to help those in need. We find this additional information in the margin interesting and quote it below:

"The substitute drug prescription of the deceased *Ahmed Paşa* is, cinnamon 22. 4 grams, cloves 22. 4 grams, henbane 44.8 grams, ginger 96 grams, mace 19.2 grams, saffron 25.6 grams, nutmeg 32 grams, pepper 22.4 grams, mastic 19.2 grams, nux vomica 19.2 grams, cubeb 25. 6 grams. These drugs are pounded and made paste with honey three times as much as the ingredients. It has been tried many times. One who is addicted for ten years will be freed of it in ten days, and those who are addicted for twenty years will be freed up in twenty days, by the grace of Allah. Those who are addicted to *berş* or opium should cut half of it and in its place consume this paste as much as five times of the reduced amount. With this method, addiction gradually stops. Me, the poor *Ahmed Paşa*, was an addict to *berş* for thirty years. Thanks to Allah, I was freed of it. And those who are freed, do not forget to pray for us."

Discussion and Conclusion

Nidâî describes substance addiction behaviors, expresses that these are bad habits and instead recommends reaching divine love and thus being in ecstasy forever. He also recommends substitute drug formulations to stop opium and *berş* addiction. Though *Nidâî* does not differentiate between addiction and dependence on addictive substances giving pleasure, his description of the addict as being unable to maintain his daily life accompanied by body weakness indicates that he is explaining dependence as well as addiction.

Nidâî claims that his prescriptions formulated as substitute for the treatment of opium and *berş* dependence are effective. The primary outcome of his interest is retention in opium and *berş* use. He even implies sustained abstinence from *berş* use. *Nidâî* and *Ahmet Paşa* does mention in short about duration of addictive substance use and dose taken while describing how to administer the substitute. There's no information about neither opium intoxication nor withdrawal symptoms.

In the application instruction of *Nidâî* the amount of opium consumed by the opium addict is not stopped abruptly, but gradually reduced while the substitute is given. A small amount of opium itself is an ingredient of *Nidâî*'s prescriptions of replacement therapy, while it is not included in *Ahmet Paşa*'s substitute prescription. On the other hand, the toxic ingredients in *Nidâî*'s replacement prescriptions, i.e. great hemlock root, henbane and nux vomica are a matter of discussion, although small amounts are used as in homeopathic medicine. On the other hand several ingredients of the substitutes, i.e. sweet flag, spurge, pellitory are known today as effective on the nervous system.

While most drugs are different in all three prescriptions cited above, few drugs are included in more than one prescription, i.e. pellitory is included in *Nidâî*'s two prescriptions; ginger and cloves are in both *Nidâî*'s opium substitute and *Ahmet Pasha*'s prescription; saffron and mastic are included both in *Nidâî*'s *berş* substitute and *Ahmet Paşa*'s prescription. Pharmacological evaluation of the discussed replacement prescriptions will shed light on a number of different perspectives.

As we have seen above, a great deal of importance was attached to the fact that these substitute drugs were experienced to be effective. Ottoman physicians have positive opinion about experienced drugs and they try to reinforce this thought with cases of treatment. As a matter of fact, *Ahmet Paşa*'s report that he tried the substitute

medicine he made on himself, and *Nidâî* 's insistence that the effect of the substitute medicines he formulized was proven by means of past experience are examples of this common attitude.

Today, methadone or buprenorphine based substitution therapy for opioid dependence is well established. We do not know whether *Nidâî*'s above cited medications advised as substitution therapies are pharmaceutically related to opium or *berş* on which an addict was dependent**.** However, it is quite remarkable that in the first half of the 16th century, replacement therapy was used as a method to overcome opium and *berş* addiction.

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Preventive Measures for Corona-Virus Disease Pandemic (COVID-19) by Unani Medicine

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Summary

Coronaviruses are a large family of viruses which may cause illness in animals or humans. In humans, several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The most recently discovered coronavirus causes coronavirus disease COVID-19. This new virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019. COVID-19 is now a pandemic affecting many countries globally. While some traditional or home remedies may provide comfort and alleviate symptoms of mild COVID-19, there are no medicines that have been shown to prevent or cure the disease. Here some preventive measures described in classics of Unani Medicine are mentioned in this paper. This article does not claim any specific prevention, management or cure for COVID-19.

Key Words: Coronaviruses, COVID-19, Unani Medicine

COVID-19 is an infectious disease caused by the recently discovered novel Coronavirus. This disease was unknown before the outbreak began in Wuhan, China in December 2019. COVID-19 is now a pandemic affecting many countries globally. COVID-19 affects different people in different ways. Most infected people will develop mild to moderate illness and recover without hospitalization.

Symptoms: Most common symptoms: Fever, dry cough and tiredness

Less common symptoms: Aches and pains, sore throat, diarrhea, conjunctivitis, headache, loss of taste or smell, a rash on skin, or discoloration of fingers or toes

In case of serious illness they develop difficulty in breathing. Older people and those with underlying medical problems like high blood pressure, heart problems or diabetes mellitus are more prone to develop serious illness. The World Health Organization has declared the COVID-19 as a pandemic and a global health emergency.

It is expected that majority of COVID-19 positive patients, with mild or moderate symptoms, may recover on their own. Certain numbers of patients who are expected to suffer from severe to critically ill situations mainly belong to 60 years and above age group.

However, anyone can catch COVID-19 and become seriously ill. People of all ages who experience fever and/ or cough associated with difficulty breathing/ shortness of breath, chest pain/pressure, or loss of speech or movement should seek medical attention immediately. If possible, it is recommended to call the health care provider or facility first, so the patient can be directed to the right clinic.

Spread: People can catch COVID-19 from others who have the virus. The disease spreads primarily from person to person through small droplets from the nose or mouth, which are expelled when a person with COVID-19 coughs, sneezes, or speaks. These droplets are relatively heavy, do not travel far and quickly sink to the ground. People can catch COVID-19 if they breathe in these droplets from a person infected with the virus. This is why it is important to stay at least 1 meter) away from others. These droplets can land on objects and surfaces around the person such as tables, doorknobs and handrails. People can become infected by touching these objects or surfaces, then touching their eyes, nose or mouth. This is why it is important to wash your hands regularly with soap and water or clean with alcohol-based hand rub. [1, 2, 3, 4, 5]

Prevention:

1. Protect yourself and others around you by knowing the facts and taking appropriate precautions. Follow advice provided by your local health authority.
2. To prevent the spread of COVID-19:
3. Clean your hands often. Use soap and water, or an alcohol-based hand rub.
4. Maintain a safe distance from anyone who is coughing or sneezing.
5. Wear a mask when physical distancing is not possible.
6. Don't touch your eyes, nose or mouth.
7. Cover your nose and mouth with your bent elbow or a tissue when you cough or sneeze.
8. Stay home if you feel unwell.
9. If you have a fever, cough and difficulty breathing, seek medical attention.
10. Calling in advance allows your healthcare provider to quickly direct you to the right health facility. This protects you, and prevents the spread of viruses and other infections.
11. Masks: Masks can help prevent the spread of the virus from the person wearing the mask to others. Masks alone do not protect against COVID-19, and should be combined with physical distancing and hand hygiene. Follow the advice provided by your local health authority [6]

Unani Medicine

As per Unani System of Medicine, SEHAT (Health) is a state of body in which the structure and functions of the body are in normal state in the presence of TEMPERAMENTAL and HUMORAL equilibrium. Health is a state of complete physical, mental and social well-being and not merely the absence of disease.

Tabī'at (Medicatrix Naturae): A power endowed by nature to every individual for self preservation which regulates its normal functions. It is the administrator, protector and healer of the body. Every person is supposed to have a unique humoral constitution, which represents his healthy state. To maintain correct humoral balance, power of self-preservation or adjustment, medicatrix naturae (Ṭabiat /Quwwate Mudabbira-e-Badan) plays an important role. If this power weakens, imbalance in the humoral composition is bound to occur and this causes disease. In Unani Medicine, great reliance is placed on this power. The medicines used in this system, in fact, help the body regain this power to an optimum level and thereby restore humoral balance, thus retaining health.

Unani Medicine recognizes the influence of surroundings and ecological conditions on the state of health of human beings. Apart from treating disease conditions, Unani Medicine lays great emphasis on the prevention of disease and promotion of existing health through principles of six essential factors (Asbab-e Sitta Zarooriyah) of life. It lays great emphasis on the maintenance of a proper ecological balance and on keeping air, water and food free from all possible pollution and pathogens. An eminent Unani physician Galen (129-200 CE) postulated that certain diseases caused by pollutants tend to be carried by wind and hence, do disseminate faster; these enter human body through respiratory route. Ibn Sina (d. 1037 AD) has mentioned in his Magnus Opus "al-Qanun fil-Tibb" in the chapter of Epidemic Fevers that sometimes it occurs due to pollution in the air, water and transformation of its qualities to heat and cold, and when it mixes with bad vapors bad quality of air occurs. There will be respiratory distress, the frequency of the breath, difficulty in breathing, stinks a lot, the intensity of thirst, and the dryness of the tongue, nausea, lack of appetite, epigastric pain, splenomegaly, dry cough, weakness, confusion, syncope, insomnia. Sometimes red pustule, thrush and ulcers, and the pulse will be more frequent and small, and intensified mostly at night, and might have a condition such as dropsy.

Treatment

First of all it shpud be noted that there is no drug to kill the virus till date, only prevention will help to stop its spread. Vaccines or medicines for COVID-19 are under investigation, and will be tested through clinical trials. (World Health Organization)

Self-care

If you feel sick you should rest, drink plenty of fluid, and eat nutritious food. Stay in a separate room from other family members, and use a dedicated bathroom if possible. Clean and disinfect frequently touched surfaces. Everyone should keep a healthy lifestyle at home. Maintain a healthy diet, sleep, stay active, and make social contact with loved ones through the phone or internet. Children need extra love and attention from adults during difficult times. Keep to regular routines and schedules as much as possible. It is normal to feel sad,

stressed, or confused during a crisis. Talking to people you trust, such as friends and family can help. If you feel overwhelmed, talk to a health worker or counselor.

Prophylactic approach by Unani Medicine for prevention of spread of COVID 19

As per Unani classical wisdom, improving immunity with immune boosters is one of the key approaches for prevention of disease and maintenance of health. Therefore, a strategy to enhance immunity and provide symptomatic relief in upper respiratory tract infection is advocated in these guidelines for qualified Unani Medicine practitioners.

Unani scholars have prescribed several single drugs as well as compound formulations for the prevention and treatment of infectious diseases in general. They have emphasized more on the use of certain drugs which are known to improve host immunity during the outbreak of epidemics, endemics and pandemics.

Unani scholars mentioned that use of Tiryaqs during epidemics strengthens the heart and keeps the body faculties strong. Single and compound Unani drugs mentioned here under, may prove to be beneficial and can be used under the supervision of qualified Unani physicians for possible immune-boosting / symptomatic relief in upper respiratory tract infections.[3, 4, 5,]

Unani Single Drugs

Unani Joshanda (decoction) is a time tested multi-ingredient used for upper respiratory symptoms such as common cold, sore throat, cough & sneezing. Consuming it on a regular basis helps improve natural immunity and strengthens the body's defense mechanism.

Unani decoctions:

Formulation 1:
1. Aslus-Sus (Glycyrrhiza glabra Linn.)
2. Khitmi (Althaea officinalis Linn.)
3. Sapistan (Cordia latifolia)
4. Khubbazi (Malva sylvestris)
5. Ustokhuddoos (Lavandula stoechas Linn.)
6. Khaksi (Sisymbrium irio Linn.)
7. Unnab (Zizyphus jujuba)
8. Adusa leaves (Adhatoda vasica)
9. Gaozaban (Borago officinalis Linn.)

Formulation 2:
1. Tulsi leaves (Ocimum tenuiflorum) 2 gm
2. Darchini (Cinnamon) 1 gm
3. Ginger (Zingiber officinale) 1 gm
4. Black pepper (Piper nigrum) 1 gm

Formulation 3:
1. Unnab (Zizyphus jujuba) 9 pieces
2. Sapistan (Cordia latifolia) 7 pieces
3. Injeer (Ficus carica) 3 pieces
4. Zufa (Hyssopus officinalis) 6 pieces
5. Aslus-Sus (Glycyrrhiza glabra Linn.) 6 pieces
6. Zanjabeel (Zingiber officinale) 6 pieces

Formulation 4:
1. Afsanteen (Artemisia absinthium) 2 gm
2. Qust Shiri (Saussurea costus) 2 gm

Formulation 5:
1. Behi dana (Cydonia oblonga): Antioxidant, immune-modulator, anti-allergic and anti- influenza. (Dose is 3-5 gm)
2. Unnab (Zizyphus jujuba): Anti-influenza, immune-modulator and antioxidant (Dose is 5 pcs.)
3. Sapistan (Cordia myxa): Immune-modulator, tracheal smooth muscle relaxant and anti-oxidant. (Dose is 9 pcs.)
4. Karanjwa (Caesalpinia bonducella): Antipyretic, antimicrobial, anti-inflammatory and immune-modulator (Dose is 3 to 5 gm)

All drugs 2 gm each is taken and boiled in 200 ml water till it is reduced to half and given to drink in the morning and evening [3, 4, 5,]

Unani compound drugs

Tiryaq-e-Arba has Dafae Sumoom (antidote) and Dafae Tashannuj (anti-spasmodic) properties and used in the dose of 3-5 gm with lukewarm water. (Not recommended for diabetics)

Local Application

In case of respiratory discomfort, local application of Roghan-e-Babuna Sada on chest is advocated (in quantity sufficient)

Inhalation of Arq-e-Ajeeb

Mix Sat Podina, Sat Ajwain and Camphor in equal parts to prepare Arq-e Ajeeb. Use 2-5 drops for Steam inhalation

HOW TO USE: Heat up the water to bolting, Pour the hot water into the bowl, Add "2-5 Drops" of Arq-e-Ajeeb, Drape the towel over the back of the head, Shut the eyes and move your head carefully towards the steam and inhale

Drugs that prevent the virus

Below mentioned Unani herbs have shown few leads to possess certain antiviral activities. They may be used under the supervision of a qualified Unani physician.

1. Kalonji (Nigella sativa): 1-2 gm
2. Seer (Allium sativum): 2-3 gm
3. Zanjabeel (Zingiber officinale): 5 gm
4. Aslus-Sus (Glycyrrhiza glabra): 5-10 gm
5. Afsanteen (Artemisia absinthium): 3-5 gm
6. Tukhm-e-Kasoos (Cuscuta reflexa): 15 gm (seeds)
7. Khayarshamber (Cassia fistula): 10-20 gm (pulp) for gargle
8. Gilo (Tinospora cordifolia): 5-10 gm

Immunity Enhancers

Khameera Marwareed: 3-5 g (Not recommended for diabetics)

Asgandh (Safoof): 5 g

Symptom Specific Approach

Symptom Formulations Dose according to age group

Dry Cough

1. Habb-e-Surfa (125-250 mg) 125 mg (pill) twice daily for 6-12 years of age 250 mg (pill) twice daily for above 12 years of age
2. Khamira-e-Banafsha (10-20 gm) (Not recommended for diabetics) 5 gm twice daily for 6-12 years of age 10 gm twice daily for above 12 years of age
3. Laooq-e-Sapistan (10-20 gm) (Not recommended for diabetics) 5 gm twice daily for 6-12 years of age 10 gm twice daily for above 12 years of age
4. Sharbat-e-Sadr (20-40 ml) (Not recommended for diabetics) 10 ml twice daily for 6-12 years of age 20 ml twice daily for above 12 years of age
5. Sharbat Zufa Murakkab 6 tsf

High Fever

1. Habb-e-Bukhar (250-500 mg) 250 mg (pill) twice daily for 6- 12 years of age, 500 mg (pill) twice daily for above 12 years of age, 500 mg (pill) twice daily for above 12 years of age
2. Habb-e-Mubarak (1-2 gm) 1 gm (pill) twice daily for 6-12 years of age 2 gm (pill) twice daily for above 12 years of age
3. Sharbat Khaksi 6 tsf

Sore Throat

Sharbat-e-Toot Siyah (20-40 ml) (Not recommended for diabetics) 10 ml twice daily for 6-12 years of age 20 ml twice daily for above 12 years of age

Difficulty in Breathing

1. Laooq-e-Katan (10-20 gm) (Not recommended for diabetics) 5 gm twice daily for 6-12 years of age 10 gm twice daily for above 12 years of age
2. Habb-e-Hindi Zeeqi (125-250 mg) 125 mg (pill) twice daily for 6- 12 years of age 250 mg (pill) twice daily for above 12 years of age

Specific Recommendations

Prophylactic approach:

Zanjabeel (Zingiber officinale), Gilo (Tinospora cordifolia), Aslassus (Glycyrrhiza glabra), Khameera Marwareed, Safoof Asgand

Symptomatic relief in upper respiratory tract infections:

Black pepper, Tulsi leaves, Behi dana (Cydonia oblonga), Unnab (Zizyphus jujuba), Sapistan (Cordia myxa), Karanjwa (Caesalpinia bonducella), Habb-e-Surfa, Khamira-e-Banafsha, Laooq-e- Sapistan, Sharbat-e-Sadr, Habb-e-Bukhar, Habb-e- Mubarak, Sharbat-e-Toot Siyah, Laooq-e-Katan, Habb-e-Hindi Zeeqi [3, 4, 5,]

Special Care for Elderly

Unani Medicine categorizes the elderly people under Abdan-i Zaifa (weaker bodies). Such population may have higher susceptibility for acquiring different illnesses. General guidelines are provided for maintaining their health

1. The diet should be in accordance with Mizaj (Temperament)
2. Nutritive and easily digestible diet should be taken
3. Frequent meals in small quantity

4. Avoid drinking cold water
5. Maintain good bowel habits
6. Maintain adequate sleep
7. Perform moderate exercises[6]

General Measures

1. Maintain social distancing
2. Frequent washing of hands with soap and water and use of alcohol-based sanitizer
3. Avoid touching eyes, nose and mouth
4. Use of face mask
5. Practice good respiratory hygiene
6. Maintain sanitation and general hygiene
7. Isolation of vulnerable population like elderly people, pregnant women and people having co-morbid conditions such as hypertension and diabetes mellitus
8. Stress relieving measures are equally important to follow. Certain Unani drugs like Sa'd Koofi (Cyperus rotundus), Ood Saleeb (Paeonia emodi) and Jadwar (Delphinium denudatum) may be beneficial.
9. Fumigation (Bakhoor) of the house at frequent intervals with combination of Sandal (Santalum album) and Kafoor (Cinnamomum camphora)

Conclusion

In Unani Medicine, prevention has been preferred to treatment. Its classical literature mentions that Tabi'at (Medicatrix naturae) is the supreme power, which controls all the physiological functions of the body and provides immunity against diseases. The disease conditions are considered to occur due to weakened medicatrix naturae and may be cured by its strengthening (including immune-modulation). Drugs for dry cough, sore throat, fever and difficulty in breathing may be used for supportive symptomatic relief.

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Modern Islamic Medicine and Modern Islamic Health Centers in Kano Metropolis, 1988 to 2012

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Summary

This paper examines the history of modern Islamic health centers in Kano metropolis from 1988 to 2012. These modern Islamic health centers since their debut have provided alternative source of medication to multitude of people in Kano metropolis and beyond. There are factors that contribute to the emergence and expansion of modern Islamic health centers in Kano metropolis. This includes search for alternative to orthodox medicine, the impact of the adoption of Structural Adjustment Program, spirit possession trends, efficacy of *rukya* healing, packaging of medicines, etc. Modern Islamic health centers have been providing both in-patient and out-patient services. The research shows that medicines dispensed by the health centers were sourced from within the local environment, and some were imported from abroad. Some were prepared at the medicine production site of the modern Islamic health centers. It was also found that modern Islamic health centers have contributed to the healing and cure of a number of organic and inorganic ailments such as spirit possession, sorcery, pile, yellow fever, malaria, cough, impotency, backache, stomach ache, etc. Thus, modern Islamic health centers have been making contribution to the health care service delivery in Kano.

Key Words: Cure, Foreign Influence, Spirit Possession, Therapy.

Introduction

Search for medication against organic and inorganic ailments has been an important phenomenon in the history of man. This led to the application of a number of substances and tools as therapy. It also led to the birth of medical profession among traditional societies. The coming of Islam into Kano led to some modifications in the way people look for and make use of medication; through addition and modification of traditional medical practices and methodologies. The arrival of scholars from Egypt who settled in Kano and began to teach medical books like *Mukhtasar* of Khalil (which is a combination of refined and summarized teachings of *Sahih Al-Bukhari)*, *Mudawwana* of Qadi Sahnun, *Muwattta-Malik, Al-Risala* of Ibn Abi Zayd*, Al-Tibb An-Nabawi* (medicine of the Prophet)*,* etc,[1] contributed to early Islamic medical knowledge in Kano. This paper discusses the history of three modern Islamic health centers in Kano metropolis, namely, Sangarib Trado-Medical Center, Gyadi-Gyadi; Ibn Sina Islamic Health Center, Na'ibawa; and Danfodiyo Islamic Health Center, Dorayi. It also discusses reason behind the patronage they attracted, medicines produced by the health centers, as well as some of the challenges facing modern Islamic health centers in Kano metropolis.

Kano metropolis is situated between latitude 11.5^0N to 12.7^0N and longitude 8.23^0E to 8.5^0E. The land mass of the area covered an approximate of 499 square kilometers. This comprises eight local government areas (Dala, Fagge, Gwale, Kano Municipal, Kumbotso, Nassarawa, Tarauni and Ungogo). The population of the area was put at 2.82 million in 2006. The population of the area was cosmopolitan in nature hosting people of different tribal and religious backgrounds.[2] The population of Kano metropolis is predominantly Hausa. This means that Hausa culture and medicine play important role in identifying, prevention and diagnosis of ailments. In Hausa culture, there are ways of generating substances from plants, animals, soil samples, water, etc. These substances and other techniques were administered as medicine according to diseases, in form of charms, incantations, exorcism, physiotherapy, etc.[3]

[1] I. H. Abdalla, "Islamic Medicine and its Influence on Traditional Hausa Practitioners in Northern Nigeria". Unpublished Ph.D Thesis, University of Wisconsin, Madison, 1982. P 64.

[2] M. Ahmad, et'al, "Gis-Based Analysis of Police Station Distribution in Kano Meropolis", in, *Journal of Computer Engineering, Vol. 8, Issue 4(2013)*. Pp. 73-74.

[3] A. M. Bunza, "Magungunan Hausa a Rubuce: Nazarin Ayyukan Malaman Tsibbu", Vol. I. Unpublished Ph. D Thesis, Bayero University, Kano, 1995. Pp 61-100.

Medicine has been defined as the knowledge and technique of the use of substances and instruments in the prevention, diagnosis or treatment of illness or body damage.[4] Islamic medicine was defined as '….a system of basic (health) paradigms, concepts, values and procedures that conform to, or do not contradict, the Quran and prophetic tradition'.[5] This paper defines modern Islamic health centers as health facilities that adopted and are characterized by the mixture of techniques and practices of traditional medicine, Islamic medicine and orthodox medicine. In the context of Kano metropolis, this type of medical profession was adopted by some Islamic scholars since the 1980s. While medicines dispensed by these health centers are termed modern Islamic medicine.

Modern Islamic health centers assumed new picture compared to what was obtainable in the field of Islamic medicine before their emergence. They portrayed Islamic medicine in a new form, by establishing structures meant for the business, peddling of Arabian and Chinese medicine, and introduction of new method of packaging of local drugs. The founders of modern Islamic health centers preferred to be addressed as 'Doctor'. For this reason, this paper termed them 'modern Islamic health centers'.

Modern Islamic Health Centers In Kano Metropolis

There is sizable number of modern Islamic health centers in Kano metropolis. These includes;

1. Sangarib Trado-Medical Center, Gyadi-Gyadi;
2. Ibn Sina Islamic Health Center, Unguwa Uku;
3. Ɗanfodiyo Islamic Center, Ɗorayi;
4. Ihyaussunna Islamic Health Center, Tudun Maliki;
5. Rahmaniyya Islamic Health Center, Zaria road;
6. Al-Huda Islamic Herbal Center, Gadon Ƙaya;
7. Al-Yusra Islamic Health Center, Na'ibawa; etc.

But this paper discusses the first three for being some of the early modern Islamic health centers in Kano metropolis.

Sangarib Trado-Medical Center, Gyadi-Gyadi (founded 1988)

One of the early modern Islamic health centers in Kano metropolis was Sangarib Trado-Medical Center. It was founded by Mallam Muhammad Khamis Kibiya in 1988. Its first location was at Layin Audu Mariri, Gyadi-Gyadi. This health center was hosting a medical school called *Al-anthaki* Herbal Training Center located in the same block with the health center.[6] The health canter was later relocated to its current location along Layin Ja'idanawa, Gyadi-Gyadi, Kano. Sangarib Trado-Medical Center was one of the early modern Islamic health centers that operated in an apartment that is mainly dedicated for health care service delivery. It occupied a large section of a block that contained five rooms. One of the rooms was dedicated for consultation. Another served as storage for medication and books. A section of the block was used for the drying of raw plant leaves and barks required for the make-up of medicines. The founder of this health center refused to use Islamic to identify the health center due to his own view with regard to its contemporary application in the context of Kano metropolis.

The founder of this modern Islamic health center viewed the use of the term 'Islamic Health Center' as fraudulent and unacceptable in the field of medical profession in Kano. "All medicines are Islamic so long its sources do not contradict Islamic injunctions", he adds. Therefore the health center was named after two medicinal plants *Sanya* (one locally-used medicinal grass) and Garib (Nigella sativa). Hence the name Sangarib was born from the marriage of San (from *Sanya*) and Garib.[7]

Mallam Muhammad Khamis Kibiya, was born in 1953 in Kibiya. He started his early education at a local Quranic school in Kibiya. Mallam Muhammad Khamis Kibiya did not attend any western educational institution. He first learnt how to read and write the Holy Quran and Arabic through *karatun allo* (local Quranic studies). When he was a child, fire gutted the library of medical and other Islamic books left behind by his grandfather. Attempts at rescuing the books led him to grab only one book titled *Shimuthul-Anwari* of Bn Al-Hajjaj. With the knowledge of Arabic language he gained from *Karatun soro* (Islamic advanced education), he started reading this book. He discovered that the book is rich in the knowledge of medicine. Similarly, the book is full of

[4] Y. A. Ahmad 'The Islamic Guideline on Medicine'. Riyadh: Maktab Dar-us-salam, King Fahad National Library Cataloging-in-Publication Data. 2010. P 14.

[5] A. Elkadi, "Contemporary Definition of Islamic Medicine", in the *Journal of Islamic Medical Association Vol. 28*, 1996, p.163.

[6] Oral interview, Mal. Muh'd Khamis Kibiya, 13th July, 2013.

[7] Oral interview, Mal. Muh'd Khamis Kibiya, 13th July, 2013.

references that were linked to other medical books. This made Mallam Khamisu Kibiya to start looking for such books to enrich the knowledge he had from *Shimuthul-Anwari*. This made him to purchase *Tadhkiratu Ulul-Albab* of Daudul Anthaki. This book is rich in names of plant and the methodology of making it medicinal. These names were written in Arabic. This gave him a new challenge where the names were not known to him. Mallam Kibiya procured a number of Arabic dictionaries for that purpose. After series of studies and challenges, he decided to establish a health center.[8]

With his lesser pilgrimage to Mecca in 1994, Mallam Kibiya bought a number of medical books such as *Alij Nafsak bil Quran*, *Al-Qanun fil Tibb, Al-Hawi fil Dibb*, *Kitabut-tasrif bi man Ajaza Anit-Tarif, Manba'u Usulul Hikma, Kitabur-Rahma, Addibbu Wadibba'u fil Andalus*, etc, and added them to the ones already mentioned. His contact with *Attar* practitioners in the Kingdom of Saudi Arabia added more impetus to his medical knowledge.[9]

This heath center graduated a number of students from its medical school. A number of them who attended Al-Anthaki Herbal Medical Center opened other health centers in Kano. This includes Mallam Abdullahi Muhammad Sani (a brother to Ustaz Haruna Muhammad Sani, the founder of Ibn Sina Islamic Health Center). He founded Minas Islamic Health Center, Tarauni, Kano. Sangarib Trado-Medical Center attended to queries not only from patients, but also from traditional and modern Islamic medical practitioners. Seminars organized by Kano State government through the Ministry of Health in 2012 were conducted under the aegis of three modern Islamic centers in which Sangarib was given the secretary role.[10]

Medicines dispensed at this health facility originated from Hausa traditional medicine and other medical practices. Medicinal herbs that were of Arabian or Asian origin such as Zam-zam water, nigella sativa, etc, are some of the components used by the health center in the production of medicines. *Rukya* (exorcism) was also administered in the health center. Orthodox medical techniques were sometimes used where patients were sent to laboratories for medical examination.[11]

Consultation requires a non-refundable fee of one hundred naira (₦100). This covers the cost of prescription card. Extra cost may apply where patient's health issue needs to be documented in a file. After consultation, medicines prescribed were to be bought at the health center on the advice of the health attendant. Patients may decide to purchase medications from other shops in order to prevent suspicion and feeling of being cheated.[12]

Sangarib Trado-Medical Center housed a section where medicines were produced and supplied to the pharmaceutical section of the health center. These medicines were not sold to vendors. They were sold to patients whose prescription cards carry the details of medications to be administered in their treatment. Some of the medicines produced by Sangarib Trado-Medical Center and the ailments they treat include *Kafiryana* (hypertension, trauma fatigue and stress), *Suffuf Basur* (pile and other stomach related issues), TP MP (typhoid and malaria), *Zufa* (cough), *Sanga*-seen (pneumonia and chest pain), *Tarkib* (appetizer and water related diseases), *Salaha* (tuberculosis and ulcer), *Birgi* (cancer, snake bites, and it serves as an antibiotic),[13] etc.

Mallam Kibiya wrote a number of manuscripts. The first work written by Mallam Kibiya was "Zuma: Ingantaccen Magani Daga Allah". He equally wrote "Ingantattun Magunguna" series I and II. Between 1988 and 1992, Mallam Kibiya wrote a series of work called "Gaskiyar Lamari Game da Sana'ar Magani". This title is in thirteen volumes, each with a sub-title. The above manuscripts have not been published. This was attributed to financial issues and insincerity of some academicians who did not return some of the manuscripts given to them for examination before publication.[14] Here, the presence of titles such as "Gaskiyar Lamari Game da Sana'ar Magani" signifies change in the mode of writing of medical knowledge in *Kundi.* It equally indicates the contribution traditional medical practitioners could render in the field of medicine should such works be given appropriate attention.

Ibn Sina Islamic Health Center, Unguwa Uku (founded 1992)

Ibn Sina Islamic Health center was founded in 1992. It is the first modern Islamic health center to add the tag

[8] Oral interview, Mal. Muh'd Khamis Kibiya, 13th July, 2013.
[9] Oral interview, Mal. Muh'd Khamis Kibiya, 13th July, 2013.
[10] Oral interview, Dr. Salisu Ahmad Ibrahim, 12th April, 2014.
[11] A. Alhassan, "A History of Modern Islamic Health Centers in Kano Metropolis, 1988 to 2012", Unpublished M.A Thesis, Department of History, Bayero University, Kano, 2016. P. 59.
[12] Oral interview, Mal. Muh'd Khamis Kibiya, 13th July, 2013.
[13] Oral interview, Mal. Muh'd Khamis Kibiya, 13th July, 2013.
[14] Oral interview, Mal. Muh'd Khamis Kibiya, 13th July, 2013.

'Islamic health center' in its name. This is because the date of the foundation of Ihya'ussuna Islamic Health Center, that might have been found earlier than Ibn Sina, was not disclosed for certain reasons.[15]

The founder of this modern Islamic health center is Ustaz Haruna Muhammad Sani. He was an Islamiyya school teacher. Ustaz Haruna was born in 1961, in Soda village, Gundumar Ƙetare of Kankara Local Government Area, Katsina State. He started his early education at a local Quranic school at Soda and later at Hausawar Gidan Zoo in Kano at a school headed by Mallam Musa. He later joined School for Higher Islamic Studies (SHIS) Shahuci. After his graduation from SHIS, Mallam Haruna participated in national Quranic recitation competition held in Kano in 1990 where he won first position. This achievement Mallam Haruna got made Alhaji Muhammad Muhammad to sponsor him on pilgrimage to Mecca. There, he got in contact with some scholars who used to gather around the Ka'ba teaching books in the fields of Islamic jurisprudence, medicine, etc. This contact is an important point around which Mallam Haruna got the inspiration towards acquiring medical knowledge. He studied many books of medicine from the scholars such as *Tadhkiratu Ulul-Albab*, *Alij Nafsak bil-Quran*, *mukaddima of Qadi Sahnun*, etc.[16]

Mallam Haruna taught at many capacities. His early teaching was at a school run by the Islamic Foundation of Nigeria- *Mu'assasat*, Al-Arham Islamiyya School, Hausawa Zoo Road, Nana Aisha Girls' Arabic Secondary School, etc. Mallam Haruna was made to establish a health center due to the cases of spirit possession in Nana Aisha Girls' Arabic Secondary School, the defunct Aliyu bn Abi Talib Girls Secondary School. Having treated many cases of spirit attacks on girl students in the Islamiyya School, there were calls from the parents of those treated, that an Islamic health center be established. His career as modern Islamic medical practitioner started with a small shop within the premises of the school. Due to increasing demand of his services, a shop was opened in Hausawar Dandago, in Kano city.[17]

In 1993, Ibn Sina Islamic Health Center was relocated to one of the corner shops of the former VVF hospital along Zoo Road, Kano. The health center was later relocated to its present and permanent office at Unguwa Uku, Kano. This modern Islamic health center was named after the Iranian philosopher and physician Avicenna (Abu Ali al-Husayn ibn Abd Allah ibn Sina). He wrote *Book of Healing*, a collection of essays on psychology, the natural sciences, metaphysics, and other subjects.[18]

Like Sangarib Trado-Medical Center, consultation at Ibn Sina Islamic Health Center attracted the sum of one hundred naira (₦100). The block of this health center harboured consultation room, pharmacy, *ruƙ'ya* room and waiting room. Patients may be sent for medical test in a laboratory before the application of medicines. Some of the medicines sold at this health center were produced there. Others were imported. Depending on the gravity or type of illness, the cost of obtaining medicines at Ibn Sina Islamic Health Center was designed not to exceed three thousand five hundred naira (₦3500) per health issue.[19] This health center had a total of two branches; one in its permanent site is in Unguwa Uku along Zaria road, Kano, the second in Katsina (established in 2003).

This Islamic health center used substances in the production of medicines. These includes honey, milk, salt, tamarind, lemon, etc. There are some substances that are imported from abroad e.g. *Habbatussauda, zam-zam, kirfat*, olive oil, etc. These substances are used in the production of medicines such as *Daridul-Jinni* (incense for patients of spirit possession), *Murham* (skin infections), *Wanke sihiri* (sorcery), *maganin basur* (pile), *Rashad* (ulcer), etc. Health cases that were successfully treated by this health center includes pile, fever, headache, toothache, coughing, dandruff, yellow fever, hernia, malaria, typhoid, spirit possession, etc.[20]

Mallam Haruna was a medical practitioner and an author. He wrote some books on medicines and other fields of Islamic jurisprudence. Some of them includes "Roƙi a Baka", "Da Magani a Gonar Yaro", "Magani da Zaitun", Shafar Aljanu", Yin Magani da Zam-zam", Yin Magani da Bacci", Jagoran Maniyyaci a Kan Aikin Hajji da Umrah", "Tarbiyyar Yara a Musulunci", Mace ta Gari", Kira ga Alhazai", Zance Mafi Dadi", etc.

[15] The founder of this health center, Dr. Yusuf Ali declined my request to interview him on the history of Ihya'ussunnah Islamic Health center, because I was not writing particularly on his health center.
[16] Oral interview, Ustaz Haruna Muhammad Sani,, 19th August, 2013.
[17] Oral interview, Ustaz Haruna Muhammad Sani,, 19th August, 2013.
[18] A. Alhassan, (2016) "A History of Modern Islamic Health Centers in Kano Metropolis, …….. P. 62.
[19] Oral interview, Ustaz Haruna Muhammad Sani, 19th August, 2013.
[20] Oral interview, Ustaz Haruna Muhammad Sani, 19th August, 2013.

Danfodiyo Islamic Health Center, *Dorayi* (founded 1996)

Ɗanfodiyo Islamic Health Center, Ɗorayi, was founded in 1996 by Mal. Abdullahi Idris Muhammad. The birth of this modern Islamic health center in Kano marked the expansion of the profession in Kano. This modern Islamic health center became prominent in the field of modern Islamic medicines not only in Kano metropolis and Kano State; the name came to be known in other parts of Nigeria. The popularity and patronage this health center earned and the coverage it had in terms of branch network made it one of the outstanding modern Islamic health centers in Kano and beyond.[21]

Mallam Abdullahi Idris Muhammad was born in 1967 in Jega. He attended his primary education at Nakhadatul Islamiyya Primary School, Gwammaja from 1973 to 1979. He joined School for Higher Islamic Studies, Shahuci from 1979 to 1985. He proceeded to Kano State College of education (now Sa'adatu Rimi College of Education) Kumbotso where he obtained a National Certificate in Education in Arabic/Islamic Studies, in 1989. Mallam Abdullahi secured admission into Bayero University Kano in 1990 and succeeded in obtaining a B.A (ed.) Arabic in 1995. Meanwhile, Mallam Abdullahi attended studies of Islamic jurisprudence with a number of scholars in Kano. Notable among them was the late Yahaya Faruƙ Chedi.[22] This background Mallam Abdullahi has helped him in developing interest in Islamic medicine more especially when the Sumbuƙa incidence stroke in Kano.[23] His ambition of establishing an Islamic health center was facilitated by the trip of late Yahaya Faruƙ Chedi to Sokoto in 1994 for *ruƙya* and other Islamic medical pursuit. Mallam Abdullahi was a party in the trip. The inspiration he got from late Chedi played important role in the development of the idea that led to the foundation of Ɗanfodiyo Islamic Health Center in 1996. Late Chedi was well known in the field of *ruƙya* during the Sumbuƙa and other spirit possession cases. There were audio recording of his *ruƙya* sessions in wide circulation in Kano at the time.[24]

The naming of institutions after individuals may not connote correlation. Ɗanfodiyo was a name that was pronounced more than others as far as the 1804 Jihad in Hausaland is concerned. His scholarly contributions were largely in the field of Islamic theology and jurisprudence. There were other names that were familiar with other fields of knowledge. These include the likes of Muhammad Tukur, Abdulahi bn Fodio, etc. These names made sizable contributions to the field of medicine.[25] These names are familiar to Islamic medicine and hence suitable as names for modern Islamic health centers in the context of Hausaland and Kano. Therefore, naming modern Islamic health center Ɗanfodiyo is inherently insufficient in defining the history of Islamic medicine in Hausaland and Kano.[26]

Muhammad Bello shows interest in and wrote books on medicine and other related issues.[27] The major source of writings on Islamic medicines in Northern Nigeria (and in other Muslim areas) are three: *Hadith* (tradition or sayings) of the Holy Prophet, Greco-Persian Islamic medicine of the Abbasid period, and local therapy.[28] One literature recorded ten manuscripts written by him on medicine: *Kitab al-rahma fi-l-tibb wal-hikma, Al-mawarid al-nabawiyya fi al-masa'il al-tibiyya, Ujalaat al-rakib fi al-tibb al-sa'ib, Kitab al-tibb al-nabawi, Kitab al-tibb al-mu'in al-musamma bi-tibb al-'ayn, Kitab al-adwiyat lil-'uyun, Musuj al-lijayn al-musamma bi-tibb al-'ayn, Risalat al-amrad al-kilyah wa'ilajiha, Al-qawl al-manthur fi-adwiyat illat al-bathur*, and *Kitab al-qawl al-sinna*.[29] Therefore, naming a modern Islamic health center after Usman bn. Ɗanfodiyo may be considered historically insufficient. Based on the contributions of Muhammad Bello to the field of Islamic medicine among the scholars of Sokoto Jihad, it may be considered appropriate to name an Islamic health center after him or

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[21] Oral interview, Mal. Abdullahi I. Muhammad, between 30th July and 1st August, 2013.

[22] Oral interview, Mal. Abdullahi I. Muhammad, between 30th July and 1st August, 2013.

[23] S. M. O'Brien (2001), "Spirit Discipline: Gender, Islam, and Hierarchies of Treatment in Postcolonial Northern Nigeria", in *Interventions,* Vol. 3 (2) p 225.

[24] S. M. O'Brien (2001), "Spirit Discipline: Gender, Islam, and Hierarchies of Treatment in Postcolonial … p 226.

[25] For instance Muhammad Bello wrote treatises on medicine which includes *Nubdha fi adwiyat al-didan, Kitab al-adwiyat lil-uyun', 'Al-qawl al-manthur fi adwiyat illat al-bathur'.* Muhammad Tukur compiled a title *'Qira'at al-ahibba fi ilm al-atiiba'.* Abdullahi bn. Fodio wrote *'Diya al-umma fi adillat al-a'imma', 'Masalih al-insan al-muta'alliq bil-adyan wal-abdan',* etc. These treatises were on medicine and related issues.

[26] M. U Bunza, (2012) "Arabic Medicinal Manuscripts of Pre-Colonial Northern Nigeria: A Descriptive List", in, *Annual Review of Islam in Africa*, Issue No. 11, 2012. Pp. 92-96.

[27] M. Last, "Innovations in the Sokoto Caliphate", in a draft copy of the paper delivered at the 200th year anniversary of the success of the Sokoto Jihad, Arewa House, Kaduna, 2004. Pp. 5-6.

[28] I. H. Abdalla, "Medicine in Nineteenth Century Arabic Literature in Northern Nigeria: A Report", in *Kano Studies, Vol. 1*(4), 1979. London: Oxford University Press. P. 95.

[29] M. U Bunza, "Arabic Medicinal Manuscripts of Pre-Colonial Northern Nigeria: A Descriptive List", …… p. 98.

other scholars who made notable contribution to the field of medicine, compared to, say, Ɗanfodiyo.

Mallam Abdullahi claimed to have started Ɗanfodiyo Islamic Health Center in one of the shops in the block where the health center was located along Ɗorayi Quarters, Kano. The health center started primarily as a point where *rukya* healing was administered to patients who were possessed by the spirits. People who have cases of spirit possession went there in search for cure. As a result of the level of patronage the health center was attracting, Mallam Abdullahi sought and secured the services of Mallam AbdulRazaq Abubakar to serve as his assistant.[30]

The incessant trooping of patients to Ɗanfodiyo Islamic Health Center was attributed to Mallam Abdullahi's paid radio and television programs. During such radio and television programs, he answered series of questions from viewers and listeners. Therefore, through the media, Mallam Abdullahi was able to undersell other modern Islamic health centers in Kano. The popularity Ɗanfodiyo Islamic Health Center recorded at the initial stage of its foundation was claimed to be due to their practice of dispensing medicine at lower rates.[31]

Another factor that led to the success of Ɗanfodiyo Islamic Health Center was the efficacy and refinement of their medications.[32] This health center has been dispensing medicines to a number of health issues. These includes asthma, sorcery, spirit possession, hernia, ulcer, malaria, fever, hypertension, hepatitis, etc. Medicines dispensed at this health center includes honey, olive oil, *Habbatusauda*, *Hidal, Shammar, Kisdul-Hindi, Albabunaj, Kurnub, Zanjabil, Mahlabiyya, Ambar, Za'afaran, Almisk, Hulɓa*, etc.[33] Most of these medicines originated from Asia, an indication of level of foreign influence on the medicines of this particular health center. Patients were given prescriptions from the listed and other medications sold at the pharmacy of the health center based on the symptoms they presented.

Knowledge of diseases and their medications by the founder of Ɗanfodiyo was another factor behind the success of the health center. As stated earlier, during radio and television programs aired by the health center, the founder answered series of questions on the nature of different illnesses and ways of contracting them. He equally gave explanation on preventive measures as well as medications that can bring relief to the sick. Here, listeners who were satisfied with such explanations formed sizable percentage of the clients of the health center.[34]

There are factors that led to the level of patronage recorded by modern Islamic health centers in Kano metropolis. One of them is the in-patent service delivered by some modern Islamic health centers. Relatives who brought their wards for medication to modern Islamic health centers from distant places were behind the commencement of the in-patent service. Patients who came from distant places such as Katsina, Kebbi and Sokoto, and whose health issue required continuous medication for a specified period of time, used to find it difficult to get accommodation. In-patient services made it convenient and comfortable for patients from outside Kano to not only patronize the services of the health centers, but to also agitate for the opening of branch close to them.[35]

Moreover, spirit possession is a health issue that was attended to by *Mallam* who operated at home or school.[36] The emergence of modern Islamic health centers in Kano led to shift where these health centers overtook the *Mallam* practitioners. Hospitals does not have cure to it. When hospital failed to cure spirit-related health issue, it was reported to either *Mallam* or modern Islamic health center. In this case, having been to hospital for treatment, Abubakar, who was believed to be possessed by the spirits, was taken to Ɗanfodiyo Islamic Health Center for treatment because of the testimony they had from beneficiary of the service of the health center on similar health issue.[37] Therefore, the failure of orthodox medicine to address some health issues that were attended to by modern Islamic health centers, especially spirit-related health issues, was another factor attracting patients to the modern Islamic health centers.

Another factor that attracted clients to the modern Islamic health centers in Kano metropolis was the packaging of medicines. Modern Islamic health centers

[30] Oral interview, Mal. Abdullahi I. Muhammad, between 30th July and 1st August, 2013.
[31] Oral interview, Hajiya Binta Abdullahi, 30th July, 2013.
[32] Oral interview, Bilya Musa, 15th November, 2014.
[33] Oral interview, Mal. Abdullahi I. Muhammad, between 30th July and 1st August, 2013.
[34] A. Alhassan, (2016) "A History of Modern Islamic Health Centers in Kano Metropolis,…….. P. 67.
[35] Oral interview, Mal. Abdullahi I. Muhammad, between 30th July and 1st August, 2013.
[36] A. Alhassan, (2016) "A History of Modern Islamic Health Centers in Kano Metropolis,…….. P. 94.
[37] Oral interview, Bilya Musa, 15th November, 2014.

sold medicines in packed containers. This eliminated the issue some people have with regard to sanity of the medications. The packs equally carry prescriptions and method of application. This also attended to the question of dosage that was lacking in many traditional medical settings before the foundation of modern Islamic health centers.[38]

Modern Islamic health centers have some contributions in the field of antibiotics. Some of them are *Aduwa* (Balanites aegyptiaca); drinking cooked leaves are used to treat intestinal worms. Ararrabi (Boswellia papyrafera); boiled bark is used to treat body swelling diarrhoea, etc. *Kalgo* (Bauhinia thonningii); boiled leaves is used to brush infected gingiva, etc.[39] Thus, Sangarib Trado-Medical Center do have an antibiotic called *Birgi*. This medicine is used to treat health issues such as cancer, snake bites, and it serves as an antibiotic.[40]

Challenges Facing Modern Islamic Health Centers

However there are challenges facing modern Islamic health centers in Kano metropolis. One of them is inadequate training for the young professionals. Apart from the defunct Al-Anthaki Herbal Training Center, Gyadi-Gyadi, there has been no traditional or Islamic medical training center in Kano metropolis.

Another challenge have to do with sanitation. Some of the modern Islamic health centers were in poor sanitary condition that do not warrant provision of health care service delivery. One of the health centers that have been providing in-patient service, there were only two toilets to serve the inhabitants of five rooms that hosted patients. The toilets were in poor condition and located in poorly ventilated area. This was made worse by the shortage of water in the infirmary.[41]

It was equally noted that the relationship among modern Islamic health centers in Kano Metropolis was poor. Their association has been poorly organized to the level that there has been no election of leaders since 2005.[42] This poses serious threat to the unity and promotion of the field of Islamic medicine in Kano.

Moreover, there is the issue of poor public awareness on healing though *rukya*. Some people in the public do consider the *rukya* healing of modern Islamic health centers similar to *bori*. They look at it as a new way of having intersession with the spirits.[43] This is inherent in the belief among traditional Hausa societies that diseases that were caused by the *iskoki* were mostly cured through *bori* after the initiation procession[44] called *girka.* This perception came from the western educated elites, who try bar their wives from attending modern Islamic medicine.

Other related challenges attributed to modern Islamic medicine, as outlined by Dr. Salisu A. Ibrahim, includes the absence of universally accepted mode of identifying diseases, lack of guarantee on quality and efficacy of their medications, dose issues, as well as the use of psychological therapy by asking patients to believe in Allah and take the medicine.[45] As such, Kano State Government set-up a Committee in November 2012, to look into the issues related to modern Islamic medicine. All traditional and Islamic health centers were termed 'traditional practitioners' by the Committee. The committee was under the supervision of Private Health Institutions Registration Unit (PHIRU) of Kano State Ministry of health, and was charged with the responsibility of looking into how modern Islamic medicine could be improved, to outline standard for the operation of their facilities, and to provide or establish a mechanism through which modern Islamic medicine could properly be administered.[46]

From the above scenario, major substances used as Islamic medicine have their roots from tradition. Garlic, tamarind, honey, nigella sativa, olive, and other medicinal plants are more traditional in origin than religious. Yet religion play important role in determining the formula and techniques of the application of the substances as medicine. Therefore, the output of the activities of modern Islamic health centers is an upshot of inputs generated from tradition and religion.

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[38] A. Alhassan, (2016) "A History of Modern Islamic Health Centers in Kano Metropolis,…….. P. 51.

[39] S. B. Zailani, and A. H. Ahmed, "Some medicinal Plants Used as Traditional Recipes for Some Disorders among Northern Communities in Nigeria", in, T. Odugbemi (ed.) (2008). *A Textbook of Medicinal Plants from Nigeria*. Lagos: University of Lagos Press. Pp. 57-58.

[40] Oral interview, Mal. Muh'd Khamis Kibiya, 13th July, 2013.

[41] A. Alhassan, (2016) "A History of Modern Islamic Health Centers in Kano Metropolis,…….. P.108.

[42] Oral interview, Mal. Muh'd Khamis Kibiya, 13th July, 2013.

[43] Oral interview, Ustaz Haruna Muhammad Sani,, 19th August, 2013

[44] A. M. Bunza, *Hausa Medicine: Its Relevance and Development in Hausa Studies.* Lagos: Ibrash Islamic Publications Center Ltd.P.3.

[45] Oral interview, Dr. Salisu A. Ibrahim. 10th April, 2014.

[46] Oral interview, Dr. Salisu A. Ibrahim. 10th April, 2014.

This paper assessed the historical foundation of modern Islamic health centers in Kano metropolis. It listed some of the medications produced or imported, and dispensed by the health centers. It discussed some of the techniques used by the health centers in the cure of ailments. Poor unity and understanding among founders of Islamic health centers, poor sanitary condition of the facilities, poor training, drugs peddling, absence of universally accepted way of identifying ailments, dose issues, prevalence of quacks, foreign influence, etc., were some of the challenges facing modern Islamic health centers.

Recommendations

It is therefore recommended that health centers address the issue of poor training by establishing health training centers, improve sanitary condition of their facilities, reduce the level of foreign influence by imbibing local medicinal crops and names, and overcome dose issues. There is need for the modern Islamic health centers to forget their differences and revive their cartel that will redefine their unity. This will bring all practitioners under the fold of the association and help drive quacks out of the profession. There should also be enabling laws to enforce ethics concerning the practice of traditional and modern Islamic medicine in Kano.

Conclusion

Lastly, modern Islamic health centers since their debut in the field of health care service delivery in the 1980s, have been providing source of medication to the people of Kano metropolis. The branch networks of modern Islamic health centers attracted clientele from within and outside Kano metropolis. Islamic health centers contributed to the health care service delivery in Kano as a potential source of alternative medicine. They provided medications to a number of health issues. Drug peddling, psychological therapy, poor sanitary condition of health facilities, absence of universal mode of identifying disease, dose issues, absence of stable unity and cordial relation among practitioners, etc, were some of the issues associated with modern Islamic health centers in Kano metropolis. Nonetheless, modern Islamic health centers have been making contributions through medications and publications.

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Human Rights in Medicine: The Consent Subject Determining the Line Through the Ages*

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Summary

Ethical principle of respect for autonomy; is the right of a person to decide for himself/herself freely. Undoubtedly, it is a limited consept as a result of socially, cultural structure, and illness itself. The realization of this principle in medicine can be achieved with "informed consent". In this context, it is one of the essential conditions for human rights and respect for individuality in medicine. Informed consent; It is a patient's acceptance of an application knowing the scope, benefits, risks, and alternative methods, if any, of the diagnosis and treatment methods to be applied to him. For physicians today, besides being an ethical responsibility, it also carries a legal dimension. The main purpose is not only to provide information, but also to achieve results; that is, he enlightened that person. In other words, in this concept, there is also the "wish" of enlightenment based on knowledge and a certain level of understanding. It is the patient's statement that he accepts, based on the information given to him, taking into account all the benefit and risk expectations regarding a future intervention, an operation to be organized or a research that he will be involved in.

In this paper, examples will be given along the line from consent deeds to the concept of informed consent throughout history; how the concept of patient rights, which is the reflection of human rights in medicine, is reached from the "consent certificates", where the legal responsibility of the physician is at the forefront, will be examined on the basis of differences.

Key Words: Informed consent, health law, consent deeds, history of medicine, Ottoman medicine, human rights.

Introduction

Undoubtedly, informed consent can be implemented in different ways in daily medical practice as one of the crucial compenents. A specific, written and signed consent must be obtained for the operation, before research, before any intervention that may be harmful. Physicians are also expected to have developed the ability to obtain informed consent from patients who are considered vulnerable as a professional attitude.

When we look at history, we come across some cases that can be seen as "first examples" of informed consent. Ottoman medicine followed the Seljukian civilisation it, as testified by several health institutions across Anatolia including Yıldırım Beyazıt Darussifa, Bayezid II Külliye and Havsa Sultan Külliye, as well as Fatih, Haseki, Süleymaniye, Ahmet I and Atik Valide Sultan Külliyes. It expanded on the Turkic medical tradition in general.

As generally accepted, one characteristic of this tradition was well-managed hospitals, while another was humanistic and care oriented treatment of mental patients. We should emphasize that "informed consent", a practice that wasn't introduced in the West until the 19th century, was well established in Ottoman medicine. Signed and sealed Ottoman records from as early as the 15th century documenting that pre-surgery patients were given detailed explanation of procedures and stated their consent before legal witnesses provide a historic milestone in the development of medical ethics and the physician's responsibility (1).

The Meaning and Function of Consent Deeds in Ottoman Medicine

The legal order of the Ottoman Empire was Sharia law, which was also the legal order of other Islamic states of the period. On the other hand, canon-names belonging to customary law also had an important place in the legal order. For this reason, while the legal responsibility of the physician/surgeon was evaluated according to Islamic

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law, professional competency evaluations were made by the physicians/surgeons of the hospital/hospital according to the laws based on customary law.

The consent deeds of the court records ("şer'iye sicilleri") are important texts in the Ottoman Empire. Generally in some cases where a risk in treatment or surgery, existed, an agreement was signed between the doctors and the patient with the testimony of the "kadi" and other witnesses before starting the surgery or treatment stating that the doctor shall not be responsible from the unfavorable results of the treatment or surgery (3).

There are numerous records related with the "consent deeds". While independent people handing consent deeds for their own treatment, in some cases there were consent deeds handed by the slaves too. The below quotation is from a document which was prepared in the 15th century (6).

"*The reason for preparing this document is; formerly a kul (male slave) named Hamza of Ahmet Celebi, son of Mevlana Sukrullah has fallen from a horse and broke his leg. Now he has stated (said in words) that he has given his consent to the surgeon Iskender holding this deed, who is a kul (male slave) of Ibrahim to amputate the leg. He declared that in case the kul gets well, it is all right! Otherwise if he gets worse he will have no problem or plea related with the said surgeon* (23 Safer year 889; 22 March 1484)"

In the literature, there are several publications on the Ayıntab Shariah Court Registry samples that will give an idea about the responsibility of the physician and the functioning of medicine (4). In Islamic law, the legal responsibility of the physician as a result of the damage resulting from the practice of medicine is determined according to some criteria such as (5);

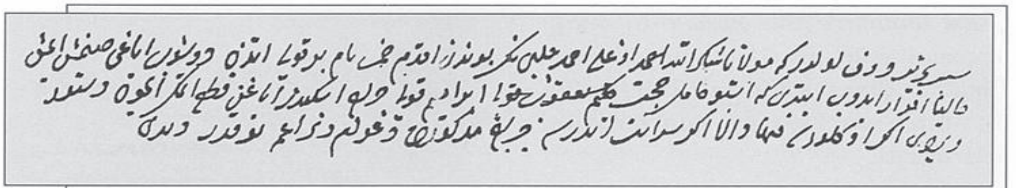
1. The physician must be knowledgeable and competent in his profession
2. The physician's action must be of medical measure
3. Prior authorization for medical intervention

If the medical intervention performed meets these criteria, the physician or health personnel are not held responsible for the damage they cause as a result of the medical act they commit. There are many examples in the literature regarding the process of obtaining permission, or the application of a consent letter, which is obligatory for the physician/surgeon to perform before the medical intervention. Again, as it is often seen in these examples, the patient herself or the patient's parent or guardian state that they will not be suing the doctor / surgeon if a bad result will occur as a result of this attempt(3).

Concerning with the early consent samples of medical practices from Gaziantep province (old Ayıntap) from the southeast region of Anatolia (7, 8, 9, 10). There are many examples from 16th - 18th centuries. A case from Sep 1, 1539 described as follows (4)

"My son Ibrahim has a stone in his groin. This Physician Budak takes out. He asked for 4 gold coins, and we even accepted. But we gave one gold, and he gave up the other three for Allah's sake. If the Ibrahim's crotch is broken and the stone is removed, if Allah's order reaches and my son dies, I will not be a plaintiff from the doctor. Even Physician Budak agreed. This has been registered.

As in many other examples, the patient himself or the patient's parents or guardians state that they will not file a claim against the physician/surgeon if a bad outcome occurs as a result of this attempt. In some court records, it is seen that the relatives of the patients applied to the court after the bad results. However, there are not many court records in the literature showing what kind of action



"Sebeb-i tahrîr oldur ki,
Mevlâna Şükrullah oğlu Ahmed Çelebi'nin, bundan akdem Hamza nâm bir kul atdan düşüp ayağı sınmış imiş hâliyen ikrâr idüp ayıttı ki işbu hâmil-i hüccet İbrâhîm kul Cerrâh İskender ayağın kat' itmek içün destûr virdi eğer onuldursa fe-bihâ ve illâ eğer sirâyet iderse cerrâh-ı mezkûrdan da'va ve nizâ'ım yokdur didi. 23 Safer sene 889"

Belge 23: Bir kölenin ayağının kesilmesi. (BŞS, A 4/4, 47a)

was taken as a result of such an application or giving information about the result. For this reason, a court record belonging to old Ayıntap Shari'i Registers is important(4). In the court decision discussed here, Ömer and Ayşe applied to Surgeon Mehmet for the treatment of a swelling that appeared on the back of their child, Surgeon Mehmet performed a surgical operation on the child and the patient died 4 days after this attempt. It is understood that they filed a lawsuit against the surgeon. The court requested a defense from the surgeon. According to this; the disease is a disease known as "ummusipian". The treatment is to first puncture the swelling with a scalpel, drain the liquid called "mâ-i cedîd" and then treat the wound. This treatment method has been used skillfully by surgeons since ancient times. The defendants gave permission to the surgeon to pierce and treat the swelling, and the surgeon provided a document confirming this. The plaintiffs stated that they did not grant permission. Thereupon, the witnesses listened to by the surgeon reported that the operation was performed with permission. Witnesses also reported that Molla Mehmet was a master surgeon. As a result of the court case, the case was dismissed.

Concerning with this case, it is understood that Surgeon Mehmet knows the legal structure of his profession well. He made his defense in accordance with the medical law criteria of his time. Accordingly, the treatment of this disease has been practiced for a long time, and the medical practice is in accordance with the usual measures. The family gave permission to the surgeon for this medical procedure, and the surgeon submitted a consent letter to the court. When the plaintiffs denied this, the witnesses declared in court that the surgeon had fulfilled the "permission requirement". This shows that the requirement to obtain permission from the patient or his/her parent/guardian before a medical intervention is fulfilled. Witnesses also reported that the surgeon was adept at his job, which satisfies the requirement that the surgeon is knowledgeable and competent in his profession.

It is seen that the three criteria mentioned above were met and the court, which was convinced that the surgeon was not responsible for the damage caused by the medical act, also rejected the case.

In the medical law of that period, it was accepted that the patient did not necessarily recover as a result of a medical act, and that personal or environmental factors could also be effective in the positive or negative result. It should be kept in mind that legal paradigms also differ over time. In many different documents, the condition of obtaining permission from the patient for the medical intervention, which is under the responsibility of the physician, is met as a "written agreement" (11). According to Amending the Law on the Performance of the Art of Medicine and Dentistry, dated 1928 and numbered 1219, which is a very old law of Turkey, it is obligatory for physicians to obtain permission from the patient himself or his parent/guardian before any kind of intervention, if this intervention is a major surgery. If so, this permission must be obtained in writing. This law is one of the first legal regulations of the republican period, it is an example showing that the republican Turkey adopted and preserved the legacy of the Ottoman medical tradition.

Relevant to the Medical Deontology Regulation of 1960 in Turkey, the physician diagnoses and treats in accordance with scientific requirements, but if these procedures do not result in absolute cure, they cannot be criticized in terms of deontology. However, in these historical documents, it is seen that those who gave the permission in case of bad / undesirable results that may occur after the surgical intervention also made a commitment that they would not be sued by the surgeon.

Human Rights Concept in Medicine

The development of the concept of HR has both direct and indirect effects in terms of medicine. One of the main pillars of the concept is undoubtedly the idea of the age of enlightenment (2).

Especially the 18th century was known as the "Age of Enlightenment" and witnessed many positive developments. At the end of the Renaissance, the hunger for ancient knowledge, art, and philosophy had created a huge cultural explosion in Europe. The discovery of America, the circumnavigation of the Cape of Good Hope, Magellan's circumnavigation of the world invalidated the explanation of the holy books that the earth is flat and Jerusalem is its centre, and the church doctrine.

On one hand, while the church-supported Aristotle and Ptolemy paradigm was shaken; The foundations of mechanics laid by Galileo, the great breakthrough made by Copernicus in astronomy and the general gravitational law found by Newton in the 17th century gave its definitive form to the scientific revolution, which was characteristic of the enlightenment age. In addition to

all these scientific and technical developments, a wealth accumulation occurred in rapidly crowded big cities with the mobilization of trade, the development of banking and credit mechanisms and the acceleration of capital accumulation. Thus, the bourgeoisie emerged as a third social force that took the people's desire for enrichment along with the power of the church and kings.

Dissatisfaction with absolute monarchies could now be expressed and even the church could be questioned. The emergence of encyclopedists in the light of Descartes' "rationalism" doctrine and the critical environment pioneered by Voltaire, Jean Jacques Rousseau and Montesqiueux questioned the world view of the church and the social order it represented. Another concept criticized by these thinkers was "Divine Law". They did not accept the violation of human rights by the powerful who said "God has said so" and they defended the inalienable and inalienable rights of being born only as human beings and the principle of equality of all people. Thus, the concept of "Natural Law", which is based on the view that society is the determinant and defender of rights, has passed from the concept of divine law. The environment that prepared the French Revolution can be briefly summarized as follows.

The 1789 Declaration of the Rights of Man and of the Citizen clearly shows the influence of the 18th century philosophers mentioned above. With this text, which is a universal comprehensive statement of principles, it is aimed to determine and define the "inexhaustible" rights of human beings. This declaration, in which the "right to freedom", "the inviolable and sacred right to property" and the "right to security and resistance to oppression" are in question, is of a nature that states that people are born and live free and equal in terms of these rights. Despite some of the shortcomings pointed out by political scientists, it is clear that this declaration heralds the beginning of a new era.

While such achievements of humanity continued on the one hand, bad experiences awaited them on the other. One of these experiences was the Nuremberg Tribunal, which resulted in an international text on medicine. This court, which lasted between November 20, 1945 and October 1, 1946, is an international military court where 24 Nazi Party members and 8 organizations are tried.

After the decision, the United Nations Organization defined the crime of "genocide". One of the results of the court is the publication of the Nuremberg Code, which is the first regulation of our age regarding medical research. Accordingly, it is necessary to obtain the voluntary consent of human subjects for research. Experiments should be done for the public good, not just for scientific skepticism, but should be confirmed by previous studies on animals. The prevention of all unnecessary physical and mental injuries in the subjects is also included in the Nuremberg Code.

The Universal Declaration of Human Rights, which was proclaimed in 1948, is based on the idea of universality about humanity beyond all states, religions and cultural forms. With this text adopted at the United Nations General Assembly on 10 December 1948, the civil, political, economic, social and cultural rights of "all members of the human family" were proclaimed. Inspired by the French Declaration of 1789, the declaration was politically compelling, complemented by two international conventions signed in 1966, and set an example for various regional texts. The "man in the center" approach in this declaration derives from Western philosophy in the Enlightenment. "All human beings are born free and equal in dignity and rights" summarizes the main idea of this philosophy. Article 25 of the declaration is directly related to the right to health: "Every person has a standard of living that will ensure the health and peace of himself and his family; especially to food, clothing, housing, medical care and similar social services; has the right to security in the event of unemployment, sickness, disability, widowhood, old age or involuntary deprivation of livelihoods. Mothers and children are entitled to special care and assistance. All children, whether born in or out of wedlock, enjoy the same social security".

Therefore, from the middle of the 20th century, medicine has to be restructured on the basis of human rights at every level, whether in its daily practice or in the research process. In this context, it should be emphasized that patient rights and informed consent are concepts that have emerged since the 20th century.

Reflection of the Concept of Human Rights on Medicine: Informed Consent

The general aims of research in health sciences are: to develop diagnostic, curative and preventive procedures; To explain the origin and development of a disease. Therapeutic clinical trials are trials in which the participating subjects are both an end and a means. If we

can talk about patient rights and participant rights today; if we are sure that if we cannot put them into practice, our medical practice and research would be incomplete, if we consider human rights as an indispensable condition for living in a modern democratic environment in all areas of life; undoubtedly, all this is the product of many years of effort. It is one of the results of the effort given to reach the concept of individual from absolute monarchies to democracies, from the concept of slave or subject.

Considering that obtaining the consent of the patient prior to the treatment has emerged in the 19th century in the Western world and it is fairly a new concept, we may mention that requirement of obtaining written consent of the patient in the Ottoman Empire which was put in force much earlier and widely used, seems very meaningful from the history of medical ethics and medical legislation (12).

There are many examples in the literature regarding the application of the permission procedure (or consent deeds) that the physician/surgeon must fulfill before the medical intervention to be made.

Again, the patient himself or the patient's parent or guardian declare that they will not be a plaintiff if a bad outcome occurs as a result of this medical intervention.

A point that can be criticized for the court decision is that the evaluation of the professional knowledge and competence of the surgeon was not done by the hospital doctors/surgeons, contrary to what is stated in the laws. This situation probably makes us think that the surgeon was recognized as a skill in his profession by the court/kadi, and therefore the information given by the witnesses on this subject was accepted as sufficient.

The doctrine of informed consent, is that before a patient is asked to consent to any treatment or procedure that has risks, alternatives, or low success rates, the patient must be provided with certain information.

This information includes;

1. A description of the recommended treatment or procedure(s)
2. A description of the risks and benefits of the recommended procedure,
3. A description of the alternatives,
4. The likely results of no treatment
5. The probability of success, and what the physician means by success
6. The major problems anticipated in recuperation, and the time period during which the patient will not be able to resume his or her normal activities.

Informed consent is of course a concept that emerged in the 20th century. Therefore, it is directly related to the development and establishment of the concept of human rights. Patient rights, which are accepted as the equivalent or reflection of human rights in medical practice, gave particular importance to the issue of informed consent in the 20th century. For this reason, it is a "sine qua non" subject for patients / research participants to be duly informed and to give their consent based on this sound information, both in clinical practice and in research.

Discussion

In the consent deeds "riza senedi" of the court records "şer'iye sicilleri" of the Ottoman Empire which constitute high importance from the medical history point of view. Generally in some cases where a risk in treatment or surgery, existed, an agreement was signed between the doctors and the patient with the testimony of the kadi and other witnesses before starting the surgery or treatment stating that the doctor shall not be responsible from the unfavorable results of the treatment or surgery. The medical interventions and treatments are handled under "paid against activities" headline within the Islamic law and the individuals that do not belong to the profession are considered to be responsible from the harm they cause to the patients. Also the application of the Islamic law in Ottoman Empire was considering the result of an action as principle; however since it was not always possible to continuously control the results of the treatment efforts in medical applications, and in case of unfavorable results it was not possible to establish a cause and effect relation, some conditions as Prof. Bayat emphasized, were looked for in order to relieve the doctors from being held responsible of the treatment. The first condition is "the doctor has to be competent and experienced in his profession. Incompetent persons shall be responsible from the harm they will cause". The second condition is "the treatment shall not go beyond some certain limits, shall be within the limits generally accepted within the period it is conducted. Failures faced in the treatments within these limits do not bring any responsibility on the doctor". And the last one is "the patient has to give his consent to the treatment prior to commencement of the treatment. The oral or written consent of the patient wasn't deemed to be sufficient and a legal text was

prepared in front of the court and witnesses in order to resolve the potential disputes".

Considering that obtaining the consent of the patient prior to the treatment has emerged in the 19th century in the Western world and it is fairly a new concept, we may mention that requirement of obtaining written consent of the patient in the Ottoman Empire which was put in force much earlier than the Western world and widely used, is very meaningful from the medical ethics and medical legislation history.

In the cases of infant and non compos mentis patients, women were choosing a person who they considered as the protector, in accordance with the patriarchal family structure. This person might be the father, grandfather, uncle or son. The examples where the mother has been appointed as the protector "vasi" are very rare in Ottoman era. This fact also gives us an idea about the place and function of women in society.

In this study, a few historical samples, especially related with early consent deeds have been given. On one hand these are obviously unique, on the other hand we have also stressed the main aim in these early documents was physician's protection. Therefore, their importance in medical law is a kind of early "warranty" form to avoid the possibility of being sued for medical malpractice. Because there have been great differences between historical consent deeds and today's informed consent forms in terms of content, structure and function.

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An Ethical Analysis of the AI Values/Principles in "Turkey's AI strategy Plan" for Improving Patients' Access to Health Care

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Summary

Turkish National Artificial Intelligence Strategy (TNAIS) has been prepared in line with the 11th Development Plan and the Presidential Annual Programs of the Republic of Turkey. The purpose of this strategy report is to describe the methods of determining national strategic AI priorities and set these priorities. In this report, according to the patent applications between 1980 and 2016, it is stated that the fields in which AI technologies are applied the most are communication (24%), transportation (24%), and health sciences (19%). Therefore, it is seen that almost 1/5 of all AI technologies are applied in the field of health science. It can be evaluated that AI technologies used in the field of health have a special place in the scope of the TNAIS report. The report covers four ethical values including (1) respect for human rights, democracy, and the rule of law, (2) improving the environment and biological ecosystem, (3) ensuring diversity and inclusion, and (4) living in peaceful, just and cohesive societies; and eight ethical principles including (1) proportionality, (2) safety and security, (3) fairness, (4) privacy, (5) transparency and explainability, (6) responsibility and accountability, (7) data sovereignty, and (8) multi-stakeholder governance.

In this study, the TNAIS report will be analyzed based on the ethical values and principles it contains within the scope of patients' access to healthcare. Then the current or prospective ethical issues emerging from the existence of AI technology used in healthcare will be addressed. Finally, the suggestions about the perspectives for approaching ethical issues when these values and principles are in conflict will be shared.

Key Words: Artificial Intelligence (AI), National Strategy, Ethical Values, Health Care, Patients' Access.

Introduction

Turkish National Artificial Intelligence Strategy (TNAIS) has been prepared in line with the 11th Development Plan and the Presidential Annual Programs of the Republic of Turkey. The purpose of TNAIS is to describe the methods of determining national strategic AI priorities and set these priorities. The definition of AI in TNAIS is;

> *"The ability of a computer or computer-controlled robot to perform various activities in a similar way to intelligent creatures. AI term; It is used for systems equipped with human cognitive abilities such as reasoning, meaning discovery, generalization, or learning from past experiences in dynamic and uncertain environments……. On the other hand, AI; although it makes use of neuroscience, contrary to what its name suggests, does not resemble the working and concept formation structure of the human brain in terms of its functioning. For this reason, the concept of AI is divided into three levels: "narrow-scoped", "general" and "super" AI. It is not yet possible for AI systems to perform multitasking in a single human-like body. While AI systems can be successful in routine, operational, and patterned analytical intelligence; their use in emotional intelligence and high uncertainty jobs that require design, empathy, and adaptation is very limited." (TNAIS, 2021).*

AI enables users to achieve safer, more accurate, and effective results in less time and make accurate inferences about the future. Therefore, the advantages of AI are more about time, security, accuracy, and foresight; all of these create a comfort zone for today's people. Lifestyles and the pace of technology depend on

this comfort zone, which AI provides by self-managing many options and decision-making, as a result of gaining a type of personality state. Such dependency and personal circumstances put AI in a more effective and powerful position (Buruk, 2020). Therefore, ethical standards are required in the national AI strategies of government structures, especially those that set the rules for AI management and governance. As the domain of AI expands in our lives, individual habits, professions, and institutional structures are re-shaped, and thus a serious transformation in the socio-economic structure is triggered. Although it is clear that this transformation has begun and will continue to accelerate, the means and pace of its interaction with existing social, institutional, and economic structures are uncertain. Therefore, especially since "emotional intelligence" is one of the shapers of the socio-economic structure, long-term experimentation, discovery, and self-updating phenomenon in the field of AI, where such uncertainties exist, should be taken into account.

In the TNAIS, the realization of *"Digital Turkey"* has been strongly emphasized. Moreover, in this report, according to the patent applications between 1980 and 2016, it is stated that the fields in which AI technologies are applied the most are communication (24%), transportation (24%), and health sciences (19%). Therefore, it is seen that almost 1/5 of all AI technologies are applied in the field of health science. It has been known that healthcare systems derive benefits from using AI technology for digital consultations and proper medication management for patients (Jiang et al, 2017). AI enables physicians, healthcare providers, and pharmaceutical experts to achieve better results in the health sciences such as advanced diagnosis, personalized medicine, and drug design (Buruk, 2020). For hospital administration processes, medical records are kept digitally by efficient and accurate AI applications, resulting in the ability to provide real-time patient statistics information both to the physician and the patient (Haleem et al, 2019).

Recently various countries have made efforts to set national AI strategies to set the rules for AI management and control. Canada was the first country to release a national AI strategy in March 2017 (Dutton T, 2018). According to OECD, up to today, 62 countries had set their national AI policy/strategy documents (OECD, 2022). None of the national strategies are alike, each of them are focusing on different aspects of AI policy. Some of the strategy reports focus on scientific research, some on talent development, skills, and education, some on public and private sector adoption, and some on data and digital infrastructure. However, it can be stated that all of the documents mention the issue of ethics, principles, and regulations. Within the scope of this study, it is not aimed to evaluate the AI strategy reports other than TANIS. The three main aims of this study are as follows:

1. To address the current or prospective ethical issues emerging from the existence of AI technology used in healthcare in the TNAIS report
2. To analyze the report based on the ethical values and principles it contains within the scope of patients' access to healthcare
3. To give suggestions about the perspectives for approaching ethical issues when these values and principles are in conflict

So in this study, we analyzed the TNAIS report based on the ethical principles and values it contains. Subsequently, we analyzed the report's approach to ethical issues and ethical analysis of the values to which they refer when one or more of these values are in conflict, especially in terms of health-related issues. We also analyzed this report according to its citations to the healthcare access field, its content acquisition, and its impact.

Methods

TNAIS includes four AI values and eight AI principles. The values are:

1. Respect for Human Rights, Democracy, and the Rule of Law
2. Ensuring Diversity and Inclusiveness
3. Environment and Biological Ecosystem Flourishing
4. Living in Peaceful, Just, and Interconnected Societies

The AI principles that the report includes are as follows:

1. Proportionality
5. Safety and Security
6. Fairness
7. Privacy
8. Transparency and Explainability
9. Responsibility and Accountability
10. Data Sovereignty
11. Multi-Stakeholder Governance

Values are subjective and local, and they may change over time (Boyd, 2005). The AI values included in TNAIS are national standards that govern the behavior of a person in relation to an AI entity. The principles included in TNAIS are based on these values those are the rules that govern the person's actions while dealing with the AI entity. The ethical principles are the rules that are permanent, and universal. We found that these values and principles are included in the TNAIS interchangeably.

We used a four-stepped methodology. First, the content analysis of the TNAIS report was performed. Second, a framework was determined with the emerging problems in AI ethics. Third, the codes obtained from the content analysis were placed in this framework. Finally, as the fourth step, ethical interpretation was made.

In the second step, we shaped the framework for emerging problems in AI ethics with a matrix prepared as given in Table 1. The rationale behind our choice of this framework in Table 1 for comparison is based on the brainstorming process with the above methodological process. We reviewed the ethical issues identified in the literature regarding AI. Then we took a look at the highlights of different countries' AI strategic plans. Following this, we identified the ethical issues in the TNAIS that intersect with the literature and other strategic plans. Finally, we evaluated these ethical issues in terms of patients' access to health services.

Table 1. The Framework for Emerging Problems in AI Ethics.

1. Bioethical Perpective	**5.** Data Issues
2. AI Research	**6.** AI Governance
3. Diversity	**7.** Privacy
4. Inclusiveness	**8.** Autonomy

Results

The focus of TNAIS is to increase the maturity level of Turkey's AI ecosystem within the framework of objectives. These objectives are supporting research, entrepreneurship, and innovation, facilitating access to quality data and technical infrastructure, regulating to accelerate socioeconomic adaptation, strengthening international cooperations, and accelerating structural and labor transformation. The main body of the report is based on strategic compliance and end-to-end governance, which will have interactions at the inter-institutional and internal levels. It is stated in the TNAIS that, the common points in the report and the guides envisaged to be prepared in this context are living and constantly evolving references (TNAIS, 2021).

The codes that we obtained from the content analysis of TNAIS were placed within the eight criteria of our framework as follows:

Bioethical Perspective

Although TNAIS is not an ethical guideline, it shares the common will of such kinds of documents; to develop AI in a morally responsible way and, have an intention to improve the AI design environment. Moreover, as a national strategy document, TNAIS provides a competitive asset for Turkey's national economy, particularly against the countries that are advanced in AI research. According to the values TNAIS includes such as environment and biological ecosystem flourishing and living in peaceful, just, and interconnected societies; we can hear both the eco-centric and human-centric perspective notions. These notions say that *"All actors involved in the lifecycle of AI systems ……. designed for the protection, restoration, and sustainable development of the environment and ecosystem."* and *"AI systems should not objectify, differentiate, or endanger any party.";* indicating that adequate risk analysis and necessary measures should be taken to prevent damage to both nature and AI users. The human-centric perspective of the report shows that its perception of minorities, vulnerable populations, and even non-humans is important. On the other hand, it also aims to introduce norms for developing human-centric AI, based on national values. These norms both promote the aims of the homo economicus to succeed in international competition and the values of the national humanistic tradition.

AI Research

One of the six main focus areas TNAIS includes is *"Increasing the number of R&D studies in the field of AI, developing entrepreneurship, providing access to high-quality data and technical infrastructure".* Under this topic, the report aims to create a national research environment intense R&D studies, pre-competitive collaborations, and innovative initiatives are needed to be successful in the field of AI. In addition, since the

development and implementation of AI technologies requires data collection, storage, sharing, and processing on a large scale, secure and scalable technical infrastructures and governance mechanisms are planned to be established to allow this. Although data issues are important for AI research topic, we will deal with this issue below in more detail. Here we would like to underline some of the goals mentioned in TNAIS such as *"AI education workforce surveys will be published on a yearly basis; At least 10 socio-technical research projects will be conducted in the field of AI"* and *"It will be ensured that the number of postgraduate theses on social and technical fields of AI is at least 1,000".* The report aims to create thematic programs in which pre-higher education students will receive training on algorithmic and critical thinking and ethics. The national AI research is planned to be carried out to evaluate its possible consequences beforehand. Activities addressing ethical and legal aspects of AI applications will be carried out. All these efforts point out that ELSI (Ethical, Legal, Social Implications) for both international and national AI research projects will be looked for. Moreover, the ethical dimensions of research projects, including health projects, will be a must.

Diversity

The diversity issue in TNAIS is being addressed both by the values and principles it includes. The value of "Ensuring Diversity and Inclusiveness" says that AI systems should be consistent with demographic, cultural, social diversity, and inclusion. The scope of lifestyle choices, beliefs, ideas, expressions, or personal experiences, including the discretionary use and design of AI systems, should in no way be restricted at any stage of the lifecycle of AI systems. Plus, the "Fairness" principle indicates that the benefits of AI technology should be shared at local, national, and international levels while taking into account the special needs of different age groups, different cultural systems, different language groups, people with disabilities, and disadvantaged, marginalized and vulnerable segments of society. According to these details that TNAIS includes, vital and cultural differences such as *"being marginalized"* depending on one's own choice or *"being disabled"* that is not dependent on one's own choice are considered equally important in ethical view. According to the TNAIS, whether the state of being vulnerable is a conscious or unconscious state, it is seen in the same ethical status. Such details of TNAIS reinforce the fact that the report cares about diversity. Moreover, according to TNAIS, in the field of health, especially considering the needs of patients who have difficult access to health facilities (inadequate in terms of physical, linguistic, economic, and health literacy) can be ethically evaluated in diversity context.

Inclusiveness

In the TNAIS it is declared that *"interviews with public institutions, universities, private sector organizations, NGOs, and international organizations"* have been and will be organized. On the other hand, one of the objectives of the report says that *"Public support for the development and application of AI technologies will be increased".* This objective points out the need for community engagement, although such a description is not included in the report. According to World Health Organization (WHO), community engagement is a process of developing relationships that enable stakeholders to work together to address health-related issues and promote well-being to achieve positive health impact and outcomes (WHO, 2020). The addressing issues of this definition are behavioral, cultural, and social conditions, health system determinants, and upstream driving forces of health and stakeholders. Patients, physicians, health workers, social workers, teachers, volunteers, and political leaders are all stakeholders in the community engagement process of health-related issues. However, TNAIS does not give such kind of detail in terms of inclusiveness.

Data Issues

Easy access to quality data, which is essential for AI research is mainly declared in TNAIS. It is also mentioned in the report that secure data sharing between institutions and sectors will be carried out. In the Open Government Data Portal and the National Data Dictionary, the data quality of public institutions will be increased and anonymized datasets will be produced and shared. A "Public Data Space" will be established to ensure secure data governance among public institutions. All these objectives indicate that the open-source ecosystem will be carried out and open data sharing will be generalized. The goal in cooperation with these objectives is to provide shared access opportunities to researchers and initiatives. However, in terms of health data; using AI technology, a patient's access to healthcare may require the sharing of that patient's own personal and health data. In this case, there may be 3 different results regarding data usage: first

the safety and security problem, second vulnerability problem, and third un-qualified data problem.

AI Governance/Regulation

TNAIS aims to establish multi-stakeholder coordination mechanisms for national AI activities. In the report, it is declared that responsibility and accountability should be appropriately distributed among actors. Moreover, a two-layered governance mechanism is planned to be achieved. The first layer will coordinate strategically in which decision-making mechanisms are involved, and the second layer will coordinate at the administrative and technical levels. It is also aimed to determine a long-term national strategy in the field of AI. Beyond all these, it is mentioned that the structure of NAIS is suitable for both experimenting and implementation; which indicates that the report is open for revisions. However, in order to assign accountability for AI development-use in the field of health, the responsibilities of all actors (physician, technical team responsible for patient data, patient) in this field must be defined. The strategic plan does not have such a perspective.

Privacy

TNAIS perspective about privacy is as follows: *"Privacy is a necessary right for human dignity and human autonomy that must be respected and protected throughout the lifecycle of AI systems, at both the personal and societal levels"*. The report recognizes privacy issues as a human right. Although it covers what needs to be done to protect privacy in general terms such as mentioning the protection of personal data, universal and cultural ethical rules and the confidentiality of personal data should also be evaluated with the same regard, there is not much more to say about it. In terms of health-related issues, protecting patients' privacy depends on some main criteria. According to American Medical Association (AMA), these criteria are (AMA, 2020):

1. Minimize intrusion on privacy when the patient's privacy must be balanced against other factors
2. Inform the patient when there has been a significant infringement on the privacy of which the patient would otherwise not be aware
3. Be mindful that individual patients may have special concerns about privacy in any or all of these areas

The development and implementation of AI technologies require data collection, storage, sharing, and processing on a large scale; which means that AI research is dependent on data. First, the patient's privacy must be balanced against the collection of personal data (health data) to protect the privacy of the patient. Second, the developers of AI entities such as the researchers and/or the supervisors of this process such as the government agencies should share the responsibility of informing the data owner users (patients) about the possibility of their privacy being compromised. And third, the meaning and perception of privacy are dependent on personal beliefs, needs, cultural norms, and the level of knowledge. So, the relationship between the user and AI entity is unique in terms of the privacy of the personal data of the user. The AI systems being designed or used in the healthcare environment should consider the above elements. The strategic plan does not have such a perspective both for health-related and unrelated issues.

Autonomy

There is a need for successful communication between the patient and the AI system to make well-considered decisions. Such successful communication depends on transparency and explainability. Transparent AI is explainable AI. Autonomous users want to trust AI without any concern, they prefer to see whether the AI entities make sense and that they can understand why particular decisions are made (Dignum, 2018). The main source of such concerns is whether the AI models are being validated for bias or discrimination (Felzman, 2019). However, the limited access to protected data used for the development of AI models creates doubts about whether transparency is provided or not. According to Beauchamp & Childress, three qualities a person must possess in relation to a specific choice for that choice to be autonomous: first intentionality, second understanding, and third non-control. Failing to meet any one of the conditions makes a decision non-autonomous. Not being adequately informed about the AI development process and not being convinced that there is no manipulation undermines AI users' ability to make autonomous decisions. In the TNAIS, under the principle of Transparency and Explainability; it has been stated that "*People have **the right to be informed of a decision** that was made based on AI algorithms and to request explanatory information from public institutions and private sector organizations in such cases……It should be possible **to explain to the end-user and other stakeholders** in non-technical terms*

and in plain language, why, how, where and for what purpose the decisions made based on automatic and algorithmic decisions, the data leading to said decisions, and the information obtained from that data are used.", demonstrating mainly the right to be informed. However, the conditions necessary for the realization of this right are not disclosed, therefore even if the user's action can be defined as intentional, it is not possible to say that the person understands the process without being controlled by the AI entity. Patients need to know that the system they communicate with is at least not a real human, but an AI system. In the report, not much has been said about this issue in the field of health.

Discussion

The main approach of TNAIS is that AI regulations should be national; because the associated risks of AI differ depending on the application and the country. Another prominent approach of the report is to strengthen the country in AI competitiveness at the global level. AI has a significant economic impact, so it is seen by many countries as an engine of productivity and economic growth (EU, 2019). World Intellectual Property Organization (WIPO) shows that there has been an enormous increase in the number of scientific papers in the field of AI since the beginning of the 2000s, followed by an upsurge in patent applications between 2013 and 2016. This could indicate a switch from theoretical research to the practical application of AI technologies in commercial research outcomes (WIPO, 2019). TNAIS, as a national strategy report, also does not ignore this reality in AI competitiveness, therefore it prioritizes allocating the necessary infrastructure, labor, and budget for AI research. The required infrastructure is technical infrastructure; within this technical infrastructure, the acquisition, storage, easy sharing, and use of the data needed for AI development are included. In order to improve the said infrastructure, open knowledge approach is being promoted by the TNAIS. The report indicates that *"administrative, legal, and technical works on easy access to quality data, which is essential for AI projects and activities, and secure data sharing between institutions and sectors will be carried out"*. However, while accessing data is facilitated, ethical values such as privacy and security have remained in the background. Therefore, in the ethical dilemma between facilitating access to quality and heterogeneous data and ensuring data privacy in order to increase the competitiveness of AI on a global scale, the second priority was privacy. The report does not include any promotion of research that protect consumers' interests and their privacy; so that personal data can be treated in a differentiated way based on consumers' own choices.

On the other hand, TNAIS has a moral imperative to ensure people from all backgrounds and parts of Turkey are able to participate and thrive in this new AI economy; data should be representative and people from diverse backgrounds are included in the development and deployment of AI systems. In terms of the ethical value of diversity, the report was written with foresight. However, there is no such explanation in the report: ensuring relevant training and skills development opportunities are provided to citizens, particularly low-income populations. In other words, it is seen in the report that inclusiveness, which is given importance to the representation of data to be used for AI development, is ignored in the accessibility of the use of AI products. There is a need for professional retraining programs for citizens to acquire knowledge, informing the population and organizations about the benefits and safety.

Furthermore, according to our methodological study, the ethical analysis perspective of TNAIS has the below characteristics:

- The context of the report has been designed to respond to the opportunities, risks, and uncertainties about AI that may arise for Turkey over time
- However such issues have not been specialized for health care needs
- The report does not present a hierarchy between ethical principles
- The report is unclear what will happen in an ethical dilemma situation

The pace of AI development is often fast, parallel and non-linear, and finding the right answer to these challenges will require a collection of actors beyond just government departments, agencies, and bodies to consider the technical and social implications of certain solutions and increase the creativity of problem-solving. To this end, TNAIS tries to develop a repository of short, and long-term AI challenges to motivate industry and society to identify and implement real-world solutions to the strategic priorities. Identification of real-world solutions gives the power to enhance the ability of ethical dilemma solving.

One of the strengths of the report is its' bioethical perspective. The report does not sound only from a human-centric perspective; but also has an eco-centric approach as well. Sustainability, balancing risk and benefit for all living things is one of its outstanding features. Finally, the fact that TNAIS has been written from a national competitive perspective rather than an ethical value perspective, and the perception that content acquisition and balancing will be made in favor of global competitiveness instead of values, is a serious ethical problem in and of itself. A solution for such possible ethical problems arising from the report could be through the revision process of the documents with the help of feedback. Certainly, the report is kept worthy by being alive and open for revision.

Conclusion

In conclusion, the Turkish AI Strategy Report touches on health-related issues but does not provide an in-depth perspective. The main features of the report are:

- Ethical issues that the report focuses on most are inclusiveness, diversity, and data issues
- According to these ethical considerations, the cultural diversity, different perspectives, and needs of groups in the country were taken into account
- On the other hand, privacy and autonomy issues have been the ethical issues that have remained in the background

As the results we obtained from our ethical analysis of the TNAIS, our suggestions has been shaped as below:

- In order to increase the bindingness of the strategy plan, it can be ensured that it is referenced with the legal legislation.
- Revision processes of the strategic plan can be defined.
- Community engagement may be taken into account during the revision stages of the strategic plan.
- Or, as in other countries (eg. Canada), a separate AI strategy plan could be prepared for the healthcare field (AICan, 2017).

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The authors certify that they have no conflict of interest (such as personal or professional relationships, affiliations, knowledge, or beliefs) in the subject matter or materials discussed in this manuscript.

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Health Care Staff and Ethics

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Summary

The nature of a human as his/her essence is always the main structure of his/her character. When we look up in dictionaries, we find the following definitions in relation to this subject: 1. It is a structure which a human doesn't acquire but brings instinctively and inborn; the genuine structure of human existence. 2. It is a structure which is defined via such forces as perception, judgment, memory, desire against physical but rather social forces, empty and deprived of a form in itself, can take a shape via external effects, but needs making sense of via big institutional products and values, that is to say, language, religion, law, state, art, science and such works as philosophy which it creates in the last analysis. 3. It is the essence of a human which makes him/her whatever s/he is. Here, we dwell upon the third one. I wonder to what extent do ethical rules and education on these knead the human nature and make it useful for the society?

Key Words: Health Care, Ethics, Patients Rights.

The nature of a human as his/her essence is always the main structure of his/her character. When we look up in dictionaries, we find the following definitions in relation to this subject: 1. It is a structure which a human doesn't acquire but brings instinctively and inborn; the genuine structure of human existence. 2. It is a structure which is defined via such forces as perception, judgment, memory, desire against physical but rather social forces, empty and deprived of a form in itself, can take a shape via external effects, but needs making sense of via big institutional products and values, that is to say, language, religion, law, state, art, science and such works as philosophy which it creates in the last analysis. 3. It is the essence of a human which makes him/her whatever s/he is. Here, we dwell upon the third one. I wonder to what extent do ethical rules and education on these knead the human nature and make it useful for the society?

The nature of a human can change to some extent via education. In fact, the education taken by starting from an early age in the family and at school will develop a person in the way of being well-mannered and make him/her conscientious, emphatic and reasonable in his/her relationships with humans. However, to what extent does education guide a person in the right way? This situation might go toward positive direction depending on the education system and practices of educators.

If there is a known fact, it is that people who have optimism and usefulness in their nature can be educated more easily. This situation is true for health professionals, too. Absolutely, for the last 10-15 years, better steps have been taken in the field of health and about the matter of medical ethics. However, do patient rights offices and units in health institutions perform their functions as required? It is natural that many subjects go unexamined in detail. However, we can state that patients are more conscious today. In the meantime, are patient rights on which everybody and every institution keeps harping every day applied to everybody sufficiently?

Here, medical deontology or medical ethics follow the same way in terms of purpose. In fact, medical ethics was first examined by philosophers and then it has become widespread as a course at medical faculties. In the meantime, medical law, too, appears before us as a branch, which especially jurists have examined in recent years. However, a deontologist, too, can examine laws and regulations at a level which can meet the need of medical faculties and interpret them.

We can say that the presence of offices, boards at hospitals only on paper indicates that not good results have been obtained in terms of respecting patient rights. It is important that there should be educators working faithfully in these places. If behaviors reprimanding

patients or their relatives and other people, being rude to them and paying no attention to medical ethics relationships are exhibited at a health care organization while entering through the entrance door, it is necessary to make education widespread to all the other staff by starting from the attendants at the entrance to the organization and this should be done sincerely(1).

If we look into the 1998-dated **Patient Rights Regulation**, we see that all the articles are exceptionally ideal and include the rules requiring looking after patients' rights in every aspect. As it is known, it is emphasized in the 'Principles' section of this regulation that the right to live is the most fundamental right of a human; a patient should be treated humanely; everybody has the right to benefit from health services, a person's physical integrity cannot be touched without consent and subjected to medical research and the principle of privacy is important. The 5th article on this subject is as follows:

"Principles:

Article - 5: While providing health services, the following principles should be followed:

a. The fact that the right to live in a whole physical, psychological and social wellness is the most fundamental human right is always taken into consideration at every stage of service.
b. By knowing the fact that everybody has the right to live, protect and develop their material and nonmaterial existence and no authority or person has the power to abolish this right, a patient is treated humanely.
c. While providing health services, patients' races, languages, religions and creeds, genders, political opinions, philosophical beliefs and economic and social statuses and other differences can not taken into account. Health services are planned and organized in a way that everybody can access easily.
d. Apart from medical obligations and cases written in laws, a person's right to physical integrity and personal rights cannot be touched without consent.
e. A person cannot be subjected to medical research without his/her consent and a permission by the Ministry.
f. Apart from cases permitted by laws and medical obligations, a patient's private life and the privacy of his/her family life cannot be touched."

When I was invited to a hospital to talk over patient rights in one of the previous years, I was very surprised. Starting from when I entered the hospital's entrance door, I saw that the people in charge there helped a lot by obeying all the ethical rules. Later, I learned from the administrators of this organization that there were patient rights offices and such people as sociologists, psychologists spent great effort to improve the hospital within ethical measures and they derived these nice results.

I understood that especially a woman in charge, who, I think, was a sociologist and working at the office of patient rights, made sincere contributions to training by talking with people face to face in every minute. This healthcare organization was one of the most known hospitals of the country and had long been known as an organization where patient rights were not looked after, ethical rules were violated. But, later, with the contribution of such a valuable training, it has become an outstanding organization having ethical values today. Hence, I understood that if it is wanted and people working at organizations are trained well, perfection can be achieved.

As a result, while regulations or laws remain on paper at some places, sincerity and frankness are observed to be extremely subsidiary values in improving a health organization in accordance with medical ethics donnee at others. However, it appears that a person or people in charge of the matter should believe in this and be people who have dedicated themselves to training people in charge by knowing human values and keep this in their minds 24 hours.

As we saw in the hospital example, even a person in charge can help an organization to possess ideal values as long as it has an understanding, a training capacity and humanistic behaviors. However, according to the neo-spiritualist view, understanding and humanism is the capability of the soul, which appears only at a certain developmental stage and develops gradually at a rate, which is parallel to the development of the soul. Conscience is the ability of a human to judge him/herself with his/her manners and knowledge. Conscience is a subjective consciousness delivering judgments by judging, proving, calling to account, accusing a person for his/her acts.

Conscience is an inner voice telling a person what is right and what is wrong. Conscience is the best guide, compass showing a human what is good and what is bad. Shortly, conscience is the real and only ethics

instructor stating what is right and what is wrong. Again, conscience is a judge which determines the border of a mistake and a truth, never sleeps, follows a person at any moment everywhere and makes judgments according to his/her intentions. Conscience is an ever-awake judge, which follows all the emotions and the thoughts of a human and purposes and intentions in these emotions and thoughts step by step, does not skip any of them, judges and appreciates responsibility without considering the feelings of others, tolerance, compassion, friendship, favoritism, etc. In this respect, every physician possessing conscience is always there for his/her patient on his/her bad days and brings him/her back to life again by treating him/her in full force.

The Turkish word 'empati' is known as "empathy" in English and means congnizantly understanding other people's emotions and emotional involvement. That is to say, a person's understanding another person's emotions and thoughts correctly by putting him/herself in his/her place. It is also very important that a physician should approach a patient with empathy. Conscience is the sister donnee with empathy. The definition of empathy is composed of three key elements. We can list these elements, which are necessary for a person to be able to establish empathy with another person, as follows:

1. A person to establish empathy should put him/herself in another person's place and look at events from that person's point of view. In other words, a person desiring to establish empathy should enter the phenomenological field of another person. What is a phenomenological field? According to the phenomenological approach in psychology, every human has a phenomenological field. Every human perceives both him/herself and his/her environment in a specific way; this perceptual experience is subjective, that is, specific to the person. Every human looks at something from his/her own point of view.
   If we want to understand a human, we should look at something from that person's point of view, and, to achieve this, we should enter the role of the person with whom we want to establish empathy and look at events simply from behind the eye-glasses of that person by taking his/her place. When we establish empathy by entering the role of another person, we should stay in that person's role for a short while and, later, we should be able to pass to our own role by getting out of this role. Otherwise, we are not counted as having established empathy. Identifying with another person (resembling that person) or feeling sympathy with him/her is different from empathy.
2. To be counted as having established empathy, we should understand another person's emotions and thoughts correctly. It is not sufficient to have understood only the emotions and thoughts of another person. When we emphasize this point while defining empathy, we talk about two basic components of empathy. These are the cognitive and affective components.
   Understanding what another person thinks by entering his/her role is a cognitive activity, but feeling what another person feels exactly the same way is an affective activity. Empathy has three components, namely cognitive, affective and motivational. While some researchers emphasize the cognitive aspect of empathy, others highlight the affective aspect of it. However, the view on which most of them compromise is that empathy is composed of cognitive and affective components.
3. The last element in the definition of empathy is the behavior delivering the understanding emerging in the mind of the person establishing empathy to another person. Even if we understand the emotions and thoughts of another person completely, we are counted as having completed the process of establishing empathy if we express our understanding. Researchers state that there is a difference between the empathy which people imagine and the one which they deliver to another person. There are two ways of giving an empathetic reaction to another person:
   Expressing our understanding a person by using our face/body. The most effective way of giving an empathetic reaction is the use of these two together. When we have a problem, if the person talking with us with a friendly smile touches our arm and verbalizes our problem by saying, for example, "You have felt very bored recently", we may feel relaxed. Every human - even every living thing - has a specific view of events. When we look from outside, we cannot see this and, hence, we cannot understand some of his/her behaviors. Only if we can put ourselves in another person's place and look at events through his/her eyes, we can understand his/her emotions and thoughts and, hence, make sense of his/her behaviors.

Feeling sympathy with a person means having the same of the emotions and thoughts of that person. If we

feel sympathy with a person, we feel pain or joy together with him/her. However, when we establish empathy, it is essential to understand the emotions and thoughts of the other person.

It is not necessary to put ourselves in the place of the person with whom we establish sympathy and understand him/her; being a "supporter" is essential in sympathy. However, when we establish empathy, we don't need to share the same emotions and thoughts with the other person; we just try to understand his/her emotions and thoughts. Understanding a person is different from acknowledging him/her to be right. In empathy, understanding is important; in sympathy, acknowledging that person to be right regardless of whether we understand or not.

There are mainly two theoretical explanations about how establishing empathy turns into helping behavior: According to the first of these, the person establishing empathy with the person having a problem helps that person in order to eliminate the problem, that is, to relieve him/herself since s/he understands the situation of the other person. The second explanation is as follows: The person establishing empathy with a person having a problem and being aware of his/her situation helps him/her by exhibiting an altruistic behavior with the aim of relieving the person in trouble.

According to the first of the above explanations, there is an egoistic motive underlying a helping behavior; however, according to the second explanation, there is an altruistic motive underlying a helping behavior. Empathy is not an activity benefiting only the person with whom empathy is established. Empathy is important for the person establishing empathy, too. People having high empathic skills and tendencies and, for this reason, helping other people are more likely to be loved by their circles (2).

While mentioning medical ethics, medical morals and healthcare organization staff -patient relations, something escapes the attention. No matter how ethical a person is, if s/he does not treat the other person with a smile, all of his/her relationship grows away from the positive way. Hence, any behavior of his/hers can be perceived negatively. People can be nervous and sulky unwittingly and leave bad reflections on the other person. What we say is also true for the physician who definitely needs to make his/her patient a fellow traveler.

Although a smile can be seen as a small point in a person's life, s/he can give the other person hope and courage with a smile. It is at this point that we want to state that smiling is very important.

There is a very important point here that we sometimes wear a sulky face while we think that we smile. This is generally the case. Sometimes, we wear a tight smile. A real smile establishes real friendship relations among people. However, a tight smile ruins friendship. For example, in daily life, if a shop assistant receives you with a sulky face, you don't want to do shopping there. This is also the case in physician and health staff and patient relationships. Sometimes, with a real smile, it might be difficult to understand the unreal.

However, a look reveals this. All these situations are the things which a person can do willingly. That is to say, it can be taught. However, especially, having a goodwill is very important. Nevertheless, what is important here is that people, who do not smile absently, should look at people more softly and humanely by taking the related training. Here, relaxation and smiling practices can be done via exercises on muscles.

It should not be forgotten that a smile softens every way, decreases the tension, eliminates disagreements, achieves confidence and commitment and, as it is in every work, the treatment of a patient becomes positive and successful, too.

Among the branches of medicine, the occupational group which is closest to a human is nurses. For, we know that the people who help patients most and give them a friendly hand during their diagnoses and treatments are nurses. However, the purposes of nursing and duties of nurses have recently been understood. Such that they have been understood as the people who carry out simple works and follow the directives of the physician during the treatment of a patient.

In the previous years, as I got to know our Nursery Faculty graduate friends doing master's degree and doctorate in the field of History of Medicine and Ethics at the Faculty of Medicine, Uludag University, I started to come down to earth about nurses and saw that they were the closest friend and fellow of the patient during treatment and rehabilitation.

In fact, the 6th article of the Nursing Regulations, too, summarizes this:

"Article 6-(1): Nurses

a. determine an individual's, a family's and a society's healthcare needs which can be met via nursing interventions in every circumstance and plan, implement, evaluate and supervise nursing care based on evidence within the framework of the needs determined within the scope of nursing diagnosis process.
b. evaluate the quality and the results of a given nursing care, make necessary improvements by benefiting from these results in giving service and deliver the results to the relevant unit.
c. in the implementation of medical diagnosis and treatment plan: apply the treatments given by the physician in written excluding emergencies, acknowledge the oral medical demand of the treating physician in case of situations developing unexpectedly or suddenly in the patient and in the diagnoses and treatment plans which need implementing urgently. In this process, take necessary procedures in terms of patient and staff safety.
ç. meet the medical demands prescribed by the physician to administer to the patient in case of need in the direction of health care , diagnosis and treatment protocols determined in accordance with scientific principles.
d. in cases when medical diagnosis and treatment procedures are projected to give harm to the person benefiting from service, discuss the situation with the treating physician; if the physician insists on implementing the procedure, implement the mentioned procedure upon the written demand of the physician by taking down the situation.
e. follow up the effects of medical diagnosis and treatment interventions on the patient; in case of the emergence of unwanted situations, report them to the physician and take necessary precautions by keeping necessary records.
f. cannot leave the institution before another nurse comes to take over the duty, before the nurse in charge delivers necessary information to the newly-coming nurse both orally and in written at the bedside of the patient and before the need for a nurse disappears in case of emergencies such as natural disasters, multiple accidents.
g. carry out the training, counseling, researching activities related to nursing. Attend scientific activities related to their profession. Give support and make contributions to the training of the society, student nurses, health staff and candidates.
h. take office effectively in all the fields where health services are given, participate in decision mechanisms in the execution of established health policies within the framework of the regulations.
ı. take into consideration the dignity, privacy and cultural values of those who benefit from service (patients) to the full extent by acknowledging individual differences between them in providing service.
i. record all implementations."

The last article in these regulations is very important. According to this article, the necessity that nurses should take into consideration the dignity, privacy and cultural values at the highest level by acknowledging individual differences between those who benefit from service, that is patients, in providing service is emphasized. We are in full belief that this duty has been and is being performed by our nurses in the best manner. We should not forget that the best friend and fellow of a patient and even a patient candidate are nurses.

Again, all staff-in charge of all healthcare organizations are friends of patient candidates. In this context, it is very important to define the duties of members of this valuable profession very well and achieve the keeping of the patient-health organization staff relationships at the highest level by complying with the articles in the regulations.

Communication, which is the most important point in human relationships, is gaining more importance today. In cases when bilateral relationships are good, everything is resolved very rapidly and good results are obtained regardless of their subject. If there is a dispute somewhere and if the problem cannot be solved in this dispute, there is certainly a lack of communication. This situation is also true for medical staff - patient relationships. As it is known, there should be communication in every stage of human life. In fact, communication appears before us as the most important source of success and solving problems in private life as well as working life of a human. In this respect, communication is gradually gaining importance in the solution of problems of patients and the achievement of the counselor-client relationship in the dialogues of health staff.

The most important point in communication is people's understanding one another. Here, it is of great

importance that the staff on duty should understand the patient and the patient should understand the staff on duty. If we take it in general, when there is a lack of communication, an agreement cannot be achieved between people and alienation starts. It becomes difficult to reach desired targets and people may leave where they are. Moreover, this kind of communication gap may have people give up their purposes. Again, a lack of communication may cause conflicts between people.

For a good communication to occur between all health staff and the patient, such points as 1) showing empathy: The Turkish word 'empati' is known as empathy in English and means cognizantly understanding other people's emotions, emotional involvement. Here, not having mercy but sharing emotions is a matter of discussion. 2) understanding and acknowledging the information which the patient gives about him/herself. 3) raising morale by trying to improve the psychological situation of the incident. 4) achieving the participation of the patient in collaboration are very important.

Health staff has also some behaviors, which may spoil their relationships with the patient:

a. Looking at other paper or lists in front of them.
b. Thinking about something else or exhibiting a behavior which indicates that they do not want to disturbed.
c. Interrupting the patient's speech or not letting the patient to finish his/her words.
d. Going away from the patient in a short while.
e. Not hearing what the patient says. The solution of all these matters depends on the presence of a good communication between the patient and the staff on duty (3).

One of the main duties of the state and, hence, the government, is to protect the lives of its citizens, that is, to achieve public health. And, this is achieved through the execution of health services. Physicians and other health staff perform this duty in hospitals, health institutions, which the government establishes for this purpose. In fact, both the government and the physician are responsible for harmful results taking place during the execution of health services. In this respect, it is necessary to examine this responsibility by dividing it into two in terms of the physician and the government.

1. The government's responsibility due to Health Services (Service Failure) This responsibility is based on service failure. Service failure may be a matter of discussion when the government fails to provide public services, which are given continuously and regularly to meet the requirements of the public in the best appropriate way and fulfill the debt arising from the obligation of making the society benefit from these services.

   Hence, the government's responsibility before the health services is divided into three:

   A. Bad Organization of Hospital Services: Hospital services, that is, public services, need executing in accordance with the requirements. It is the government's duty to perform this execution continuously and regularly and have the public benefit from these services as required. A certain mistake is sought to hold healthcare organizations responsible for a failure.

      For example, the administration becomes responsible for harms resulting from such situations as leaving a patient hospitalized urgently unexamined for a long time and the patient's dying and not reporting suspicious symptoms in some examinations.

   B. Practices related to the Care Giving Harm to the Patient: This type of failures are divided into two: a) Material Care Failure: for example, some tools and materials, which need to be available in the hospital, may be missing. b) Medical Care Failure: Damages arising from faulty behaviors of medical staff or broken tools and materials may result in responsibility.

   C. Medical Actions Giving Harm to Patients:
      Especially damages occurring in treatments and surgical operations are generally service failures.

2. Personal Responsibility of the Physician and Other Staff in Health Services: This responsibility is based on personal failures performed by the physician during the execution of health services. Some examples can be given in relation to this matter. For example, such incidents as a physician's attempting to do a risky practice in a non-urgent phenomenon without taking the informed consent of a patient, a surgeon's not looking after an urgent case, a physician and a midwife's leaving a patient giving a birth and escaping the delivery room due to the blowing out of ether during a delivery are the personal failures of the physician. Here, there is the physician's criminal and civil liability.

As it is seen, in administrative duties and in services in a healthcare organization, a physician's and other staff's carelessness creates administrative responsibility. Today, many healthcare organizations fairly compete for keeping a patient with a rendezvous. As it is known, there has been a rendezvous system in many hospitals, dispensaries and clinics for a long time.

What do I understand from this, or more precisely, what is a rendezvous? If we look at its definition firstly, it means this: A rendezvous is a "meeting settled between two or more people at a certain time and place. That is to say, in medicine, it includes such situations as a patient's and a physician's coming together at a certain hour or doing medical examinations of a patient. The English equivalent of this word is "rendezvous" and is used in our language as "randevu". Abiding by given hours and minutes is a duty which healthcare institutions obey most because here a patient is a matter of discussion. And, a patient is a person who expects his health to improve and needs a care more than everybody.

In one of the previous years, when I went together with a relative of mine to a healthcare organization (a dispensary), which was not very big and received patients with a rendezvous, to have an eye check by taking a rendezvous, I witnessed with regret that the physician could examine my relative's eyes 1.5 hours after the given hour. I knew that this organization generally abide by given rendezvous hours. However, the promised hours were not complied with due to the ophthalmologist's having an administrative duty at the same organization. There was only one physician in the department of eye diseases. He was, at the same time, the chief physician of that organization. There was not a second ophthalmologist in the department.

However, since I also waited together with my relative, I extremely felt uneasy and I felt sorry for patients and their relatives waiting there. Again, while waiting, the staff on duty was saying that we could go and come later. This person did not know the word "Time is money" and time was not a valuable thing for that person. Moreover, I did not tell that I was a medical ethics lecturer and, hence, I tried to observe the situation with a more objective eye. In the meantime, the ophthalmologist coming after a waiting of 1.5 hours told my relative the reason why we waited with a polite and fatherly language and relaxed our strained nerves and made us feel relaxed to some extent. Even, he also had a heart-to-heart talk with us and explained why a second ophthalmologist could not be assigned.

In this case, I, as a patient relative and a medical ethics lecturer waiting for the physician there for 1.5 hours, started to think regretfully that ethical lessons given to physicians and other medical staff sometimes went for nothing and draw some conclusions from this.

However, we, medical ethics lecturers, most frequently keep teaching our students in lessons that patients should not be kept waiting and keeping them wait despite a rendezvous is against the principles of being beneficial for the patient and not giving harm to them, which are the famous principles of ethics, and also the principle of justice. It is probably because some of medical students either forget or do not adopt these, when they become a physician, keeping a patient is perceived by some physicians and healthcare staff as a normal thing.

Today, the Ministry of Health is trying to prevent queues at healthcare organizations with the rendezvous system. However, since the hour given to a patient is not complied with, queues have started to occur again and the matter is becoming complicated again as it was in the past. In the meantime, the situation of an emergency patient is urgent as it is understood from its name. It is natural that there cannot be a rendezvous system here. However, it is sometimes seen that this type of patients are given a rendezvous to a very late date and kept waiting.

Moreover, we cannot help thinking about how likely is seeing such moral values as physicians' and healthcare staff's treating patients empathically and being polite toward them in their relationships with them in a queue where patients are aligned one after another. For, we encounter such different situations in physician-patient relationships that these values seem like the products of a dream world and abandon us to despair. Again, we see that some good values, too, have started to establish gradually at least in a medical environment trying to look after patient rights and apply regulations and laws(4),.

When I thought that these good values would never come true and saw that the healthcare organization, which we visited for a reason in one of the previous ears, was full of medical ethics donnees, I was astonished very much. I also congratulated a friend trying to establish these values there and charged with training the working and the administrative staff. That is to say, seminars and trainings about ethics applied at a healthcare organization

sometimes achieve to establish these values at that organization. It is natural that not keeping a patient waiting and keeping one's word, too, are the most prominent of these values.

From time to time, we drop by a hospital for ourselves or a relative of ours. However, we definitely want to come across staff with conscience firstly at these places. The staff with this viewpoint should be available at both all private and all public healthcare organizations. However, we see at some places that the staff on duty starts to inquire about a payment either at first sight or at greeting and this inquiry is done within impolite patterns. In fact, I find this situation odd at each time. For, there will certainly be a financial payment and return for health services. However, here, I hold the opinion that financial issues should be settled not in the form of a payment made in return for any goods bought from a shop but with a more polite and more understanding manner based on conscientious bases.

In one of the previous years, we went to a private healthcare organization for a relative of ours. There, they immediately sent us to the pay desk and treated us like a money machine by attempting to receive money. We found this odd because there is a polite way of asking for and receiving money. The staff at these institutions/ organizations should be extremely conscientious by thinking that they are dealing with patients. As it is known, conscience is known as power "forcing a person to make a judgment about his/her own behaviors; having a person make a direct and spontaneous judgment over his/her own moral values."

While admitting patients to healthcare institutions and examining them, it is definitely necessary to act with this conscience definition. Healthcare institution/ organization staff should be trained in relation to this matter and disagreements, which are likely to occur at this point, should definitely remain within the scope of the administrative responsibility. In terms of administrative responsibility, administrative staff should definitely be trained in terms of ethics; they should not see patients as only people paying money and they should be made to behave conscientiously and affectionately.

It is natural that an organization remains standing and give service to its patients via financial possibilities. However, especially generating an income by remaining in patterns, which are away from conscience and send patients away, and behaving like a money machine are seen as behaviors, which do not comply with ethics. We are in full belief of the necessity of eliminating these behaviors through trainings to be given by the administrators of healthcare organizations.

For example, the symptoms of patients or patient candidates coming to a healthcare organization with a pain or low spirits may increase further. For this reason, rude and strict behaviors and, in the meantime, impolite addresses and behaviors in payments related to health may create a big disappointment in a patient or his/her relatives. One of the main duties of the administration in a healthcare organization is to protect the lives of its citizens, that is, to achieve public health.

And, this is achieved through the execution of health services. Physicians and other health staff fulfill this duty in hospitals, healthcare institutions, which the government established for this purpose. If there occurs a failure while a physician performs this duty, s/he becomes responsible and, hence, physician - patient relationships are damaged legally. In fact, both the government and physicians are responsible for harmful results occurring in the execution of health services. In conclusion, administrative failures are related not only to deficiencies in technical practices but also to administrative staff's behavior to the patient and, in our opinion, the best way of doing this is to train administrative staff in terms of medical ethics.

We always emphasize the importance of empathy, that is, putting oneself in place of another. For example, treating a patient coming to you with an intense pain very well and affectionately and putting ourselves in place of him/her is the most important and the first rule of the ethical behaviors in medicine.

The Turkish word "empati" is known as "empathy" in English and means congnizantly understanding other people's emotions and emotional involvement. In other words, it is a person's understanding another person's emotions and thoughts correctly by putting him/herself in place of the other person. It is very important that a physician and other medical staff should approach a patient with empathy. Conscience and empathy are sister donnees. The definition of empathy is composed of three basic elements. We can list these elements which are necessary for a person to establish empathy with another person as follows:

1. The person, who is to establish empathy, should put him/herself in place of the other person and look at

incidents from his/her perspective. Every human perceives both him/herself and his/her environment in a way which is specific to him/her; this perceptual experience is subjective, that is person-specific. Every human looks at the word with a specific viewpoint. If we want to understand a human, we should look at the world through his/her eyes; in order to achieve this, we should enter the role of the person with whom we want to establish empathy and look at incidents from behind his/her eye-glasses by taking his/her place.

2. Again, in order to be counted as having established empathy, it is necessary to understand the emotions and thoughts of the other person correctly. It is not sufficient just to understand the emotions and thoughts of the other person. It is necessary to understand what the other person thinks by entering his/her role and feel the same as what s/he feels.
3. The last element in the definition of empathy is the delivery behavior of the emphatic understanding occurring in the mind of the person establishing empathy to the other person. Even if we understand the emotions and thoughts of the other person fully, we are not counted as having completed the process of establishing empathy unless we express our understanding. Researchers report that there is a difference between the empathy which people create in their minds and the one which they deliver to the other person.

There are two ways of giving an empathic reaction to other people: expressing that we understand him/her by using our face and body. The most effective way of giving an empathic reaction is the use of these two together. When we have a trouble, if the person talking with us with a friendly smile touches our arm and talks about our trouble by saying, for example, “You have felt very bored recently.”, we feel relaxed.

Every person has his own way of viewing events. When we look from outside, we cannot see this and, for this reason, we cannot make sense of some of his/her behaviors. If we can put ourselves in place of the other person and look at events from his/her perspective, only then it becomes possible to understand his/her emotions and thoughts and, hence, make sense of his/her behaviors.

However, feeling sympathy with a person means having the same emotions and thoughts which that person has. If we feel sympathy with another person, we feel pain or joy together with him/her. When we establish empathy, however, it is essential to understand the other person’s emotions and thoughts. It is not necessary to put ourselves in place of the person with whom we establish sympathy and understand him/her; in sympathy, being a supporter is essential.

When we establish empathy, we don’t need to share the same emotions and opinions with the other person; we just try to understand his/her emotions and opinions. Understanding a person is different from acknowledging him/her to be right. In empathy, understanding, and in sympathy, acknowledging the other person to be right is a matter of discussion regardless of whether we understand or not.

As it is seen, a physician’s and health staff’s approaching a suffering patient with empathy is a great factor in our understanding him/her. Anyway, we have no doubt that a physician, who is the greatest friend and fellow of a patient, will behave in this way. This is the essence and core of the physician - health staff and a patient relationships (5).

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The Place of Egyptian Bazaar in the History of Turkish Pharmacognosy and Samples

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Summary

The investigation of some folkloric treatments is possible only by means of careful folkloric study. Although some investigations are made by nonmedical persons in this field in Turkey so far a scientific characteristic has not been achieved. In this article, we discuss a folkloric theme that is convenient for a scientific basis. It is known that folklore is a science of culture and daily life of the people. Primitive treatments and religious believes that are applied by people, are also found in medicine as in many other professions and these primitive forms of treatment constitute the folklore of medical profession. Folkloric medicine is strictly interested in history and natural sciences. For this reason, a folkloric investigator should possess the faculties of a biologist and a historian. On the one hand, the science of folklore both gathers events and classifies them, on the other hand it explains them and determines their causes. Therefore, we can not only explain the method of a treatment that is applied by people, but also we can investigate its origin. So the source is searched for in history, One who studies folkloric medicine, should be a medical doctor, and possess historical culture.

Key Words: Egyptian Bazaar, Pharmacognosy, Medical History.

The investigation of some folkloric treatments is possible only by means of careful folkloric study. Although some investigations are made by nonmedical persons in this field in Turkey so far a scientific characteristic has not been achieved. In this article, we discuss a folkloric theme that is convenient for a scientific basis. It is known that folklore is a science of culture and daily life of the people. Primitive treatments and religious believes that are applied by people, are also found in medicine as in many other professions and these primitive forms of treatment constitute the folklore of medical profession. Folkloric medicine is strictly interested in history and natural sciences. For this reason, a folkloric investigator should possess the faculties of a biologist and a historian. On the one hand, the science of folklore both gathers events and classifies them, on the other hand it explains them and determines their causes. Therefore, we can not only explain the method of a treatment that is applied by people, but also we can investigate its origin. So the source is searched for in history, One who studies folkloric medicine, should be a medical doctor, and possess historical culture.

When we investigate folkloric medicine, we should distinguish data that come from modern medicine and folkloric information that are actual ideas and behaviours of people. We know that everything arises out of the needs of men. Men thought of these remedies during long centuries. Thus folkloric drugs have been used since primitive ages and the needs with regard to these medicines have come so far. So folkloric drugs and documents about public physician-ship continue from generation to generation, from instructor to apprentice.

We understand in these investigations that especially the old people learn these drugs from their grandfathers, grandmothers or neighbours and that the apprentices from their instructors. In addition, the ways of oral tradition in the same family and of the transition from a family to the other family became the basic characteristics of folklore. Thus the traditions with respect to folkloric medicine continue among people in the same way as the most sacred concept. Both the continous effect of old traditions and myths and ancient manuscripts set an example in the settlement and spread of medical folklore in our country as in others. The course and source of a tradition, that is, an information with regard to folkloric medicine is understood by comparison with the traditions of nations that are differed from each other from the point of location and civilization. Thus, folklore is a national

science; but all nations also trade in this field; thereby the analysis of the pure folklore of a nation from folkloric knowledge that comes from abroad is very difficult.

In this way, Turkey remained under the effect of various nations during long centuries. Anatolia seemed in the scene of history in 3000 B.C and it was related with other nations. Anatolia where nations such as Hittite, Urartu, Asuria and Lidia prospered, was invaded by various nations. We can count raids such as Egypt, and Alexander the Great. Eastern Roman Empire which was founded in 395 A.D, affected Anatolia during long centuries. Afterwards, the movement of Turkish nationalisation began in Anatolia from 26 August 1071 Malazgirt War. Furthermore, the information of Seljukian and Ottoman Turks were added to the impact that the civilizations of Greek and Rome left in Anatolia. Moreover, Islamic civilization spread over Anatolia, which arose in the Arabic Peninsula in the beginning of VII th century and became rich with data of ancient China, India, Persia, Greek, Rome and Byzantium.

Thus information that we collected from attars, rootsellers and old and experienced people in Turkey, remained as a legacy from the data of all other nations.

Today old believes and traditions also continue among herbalists in the Egyptian Bazaar in Istanbul and rootsellers in other cities of Turkey and old and experienced people. Especially old and experienced men notify their knowledge to the new generations. Nowadays although the development of modern medicine decreased the usage of believes in old men, the men who believed the tradition and superstition, make use of both old people and herbalists. Today it is possible to see this condition in various classes of people in Turkey. Although men make use of the principles that modern medicine brings, they also apply the data of folkloric medicine. On the one hand, they go to the physician for diagnosis and the treatment of disease, on the other hand they resort to the herbalist-shops. Although it is supposed that herbalists whose numbers decrease, sell only spices, they still describe the specialities of herbalist to people and they prepare these drugs and give them to men.

So, in our country, we explain some knowledge collected from herbalists and old people, from the point of these views we try to show that both folkloric medicine and modern medicine are in connection.

We give some patterns from Istanbul and Brussa in this article. Today people from various social classes and from different cities of Turkey are found in Istanbul,and Brussa thus they also bring the folkloric medicine of those places. Therefore it is impossible to find a pure folkloric medicine that belongs only to this cities. Thus we try to give from public treatments collected from onl people of Istanbul and Brussa and old Istanbul and Brussa herbalists and we shall compare these findings with modern medicine.

1. Treatment of itching and eczema
   100 gramme powdered sulphur and 2,5 gramme lead oxide are mixed with a little olive oil and this medicine is applied to the skin in the form of an ointment. 300 gr ash is mixed with 200 gr powdered sulphur and olive oil is added to this mixture and applied.
   Sulphur converts the constitution of alkaline disulphur and pentationic acid in skin and is effective in the treatment of scabies and all micotic infections of skin as parasitic and fungisitic. Therefore this drug is also used for the same purpose in modern medicine as in folkloric medicine.

2. Treatment of diarrhoea
   A tea spoonful powdered sumach (Rhus coriaria, Anacardiaceae) is administered to the patient with a little water once in two hours. In addition, the boiled solution of sumach is given per os to the patient. Sumach has the effect of blood blocking and constipation because it has tannin.

3. Treatment of hemorrhoids
   According to information collected from old herbalists, 50 gr of rhubarb root is pounded and powdered then it is mixed with 25 gr carbonate and 100 gr powdered sugar. Patient with hemorrhoid swallows a tablespoonful of drug with a little water after meals. Because the root of rhubarb (Rhizoma Rhei, Polygonaceae) has the derivation of anthracene it increases the peristalsis of intestines and so it affects as a purgative.

4. Treatment of asthma
   The leaves and flowers of datura are used in the treatment of asthma. Thus this drug is chopped into small pieces and wrapped by a cigarette paper and it is smoked in the form of a cigarette. Hyoscyamine, atropine and scopolamine are present in the constitution of the plant and therefore this drug is also used in the treatment of asthma in the form of cigarette of fumigation in modern medicine.

5. İntestinal worms.
   The oil of thyme (Oleum Thyme, Labiatae) is dropped on a sugar lomp and given to the patient in the evening and morning. Because the oil of thyme has a terpenic matter, called thymol, it affects the intestines as an antiparasitic.
6. Treatment of malaria
   The bark of quinquina (Cortex Cinchona, Rubiaceae) is used in the treatment of malaria among people. I kilo of black grapes is pounded in mortar and mixed together with 100 gr of quinquina, water and wine. The upper part of this mixture is covered with bran, it is boiled and strained. Strained part is administered to the patient a teaspoonful during meals. The bark of quinquina is a very important drug because it has quinine alkaloid in its constitution.
7. Treatment of diabetes mellitus
   Boiled solution of mahaleb (Fructus Pruni mahaleb, Rosaceae) is administered to the patient with diabetes mellitus. It is known that this drug regulates glycine metabolism in nervous diabetes, because of an alkaloid that is found in this drug and resembles to spartein, is oxidated easily and it shows the characteristics of nervous system.
8. Treatment of abdominal pains and flatulence
   Nutmeg is used for abdominal pains and flatulence. Internal parts of this drug are carved and these pieces are mixed with milk or almound oil and this mixture is administered to the patient. This drug is used as a stimulant and carminative in modern medicine. It has an volatile oil that stimulates the movement of the muscles and the gastrointestinal tract, but the mechanism of this oil isn't known today.

Some traditional drugs are also used in the pharmaceutical industry for the treatments of some diseases, in Turkey, today. Some drugs such as ginger, horse chestnut, garlic, colchicum seed etc. can be given as some samples. These are prepared in the pharmaceutical forms such as pomade, pill, capsule, These traditional drugs have also been used among people for the traditional treatments since ancient ages. Anatolian Turks also used these drugs for the same aims in the period of Ottoman Empire.

All these drugs are also prepared in the form of galenical preparation and they are used by the Turkish people. These are useful drugs of nature.

The trade of drugs assumed great importance in Turkey during long centuries. Medicines came to Ottoman ports through the searoutes until the 17th Century and Turkey served as a bridge between Europe, Middle East and Far East. But, in later periods, various countries obtained this position when big sea-routes were opened up. Moreover, medical specialities were used when first pharmacies were inaugurated in Turkey in 19th Century. Before 19th Century medicines were not prepared according to the manufacturing techniques adopted in Europe.

A great deal of drugs were prepared in Egyptian Bazaar in Istanbul in Turkey. This Bazaar was restored in the 17th Century, following its acceptance as a trust to the New Mosque in Istanbul. Again, it was restored in 1942. Today, some attar-shops are present in this Bazaar.

Various specialities were prepared by pharmacists of the Egyptian Bazaar as pill, suppository, powder, pomade, cataplasm, infusion. But, these preparations were very primitive.

In different places and at different times, these drugs were generally used for medical purposes. This can be verified by investigating various historical and medical manuscripts, Turkish and foreign, history of medicine, pharmacy books, and the documents of Turkish Primeministership Archives (1, 2, 3, 4, 5, 6, 7).

Therapeutical methods among people have two forms. One of them is the treatment with drugs, the second uses some spiritual methods. The methods of psychotherapy in folklore medicine are highly used in the treatment of psychosomatic diseases.

The treatment with drugs is the organic treatment. In these therapies, various drugs are used in the form of primitive prescriptions. Pharmacological effects of some drugs are also accepted in modern medicine. Thus, the scientific validity of some primitive information, that has been applied since ancient ages, is proved by scientific investigations. But some primitive methods have no pharmacological effects. So, these kinds of therapies are harmful for patients. Today, some formulae with respect to drugs are given to people in the attarshops in some cities of Turkey (Istanbul, Brussa, etc.) and these primitive formulae are prepared in the form of some pharmaceutical preparations such as pill, powder, suppository, fumigation and ointment.

We can give some samples from organic treatments. In the treatment of cough, black-pepper is mixed with

honey and this mixture is administered to the patient. Gum arabic is mixed with water and sugar and this mixture is given to the patient in diarrhoea. Henbane, seeds of poppy, camomile, rose are boiled with vinegar and this mixture is given to patients in the form of gargle for toothache.

In addition, gum arabic, starch, hellebore are mixed and this preparation is used in the form of pill in cough. For preparing the astringent pill, the seeds of myrtle, gum arabic, olibanum, myrrh and sumac are pounded in a mortar and then gum arabic soaked in water is mixed with this mixture and is given to the patients in the form of pills in the size of chick-pea, two by two, in the morning and at night (8, 9, 10, 11, 12, 13, 14, 15, 16).

Folklore treatment of psychosomatic diseases is made with suggestion. In modern medicine, both medical and surgical therapy, psychotherapy and sedative drugs are applied to the patient. The therapies with suggestion (psychotherapy) have also been used since ancient ages. Psychotherapy used as a therapy in ancient Mesopotamia and in ancient Rome. Thus, priest-physicians of Mesopotamia collected drugs in the moon-night, because the moon is the god of health. The priest-physicians of Egypt usually used drugs together with prayers.

Sacred words were pressed on pastilles in the Islamic World and it was believed that these kinds of remedies were useful for the patient. Now-a-days, a great deal of Western drugs have the sign of Cross.

Various drugs have been used by people as a means of psychotherapy for years. In addition, some primitive methods are also applied in the treatment of psychosomatic diseases.

Some of the psychosomatic diseases for which primitive samples are used are: Skin diseases, syndromes of muscle-skeleton (e.g. headache, myalgia), the diseases of respiratory system (e.g. asthma, bronchial spasm), cardiovascular diseases (e.g. hypertension, migraine), some blood diseases, gastrointestinal disorders (e.g. peptic ulcer, obesity, astringency), urogenital disorders, some neurotic diseases.

Some examples of the treatment with suggestion, that is, psychotherapy, for psychosomatic diseases among people, are as follows:

l. In the treatment of acne: Snake-skin is soaked in water and the liquid so obtained is called snake-water. People believe that snake water has a magic power and so it can successfully treat acne. Snake-skin is burnt and the resultant fumes are used as fumigation. Fumigation is also applied in the treatment of a great deal of psychosomatic disorders and a psychic treatment is applied on patient with fumes of this drug. This method is a way of pirimitive psychotherapy, that is, suggestion.
Istanbul and Brussa attars and senior citizens gave these samples to the author of this paper along with oral traditions. Brussa is a Turkish city with antique characteristics. In addition, the ways of application of these samples to the patient were seen by the author. All traditional samples belong to Ayşegül Demirhan's collection.

2. In the treatment of sleeplessness and some neurotic disorders: Seeds of poppy are wrapped in a piece of cloth and this package is used as a cushion which is supposed to create a spiritual belief in the patient.

3. Aloe is burnt and its fumes are supposed to cure a patient suffering from a psychosomatic disease (e.g. ulcer or gastritis).

4. In some psychosomatic disorders, fumes of some drugs, for example, frankincense, red sandalwood and antimony are burnt and the patient is exposed to the fumes.

5. Harmal seeds (Peganum harmala) are extensively used in Anatolia for the treatment of psychosomatic disorders. For example, in Erzurum and Sivas (Turkish cities) this treatment is popular. People believe that this drug has a magical power. The seeds are used for fumigation or as a charm against evil eye.

6. A little musk is mixed with rose-water and some prayers are written in a bowl and this water is administered to the patient with a mystical belief that it has a therapeutic effect which is the outcome of prayers.

7. Mercury is also used in psychosomatic disorders. It is placed in a bottle and the patient carries it. It is believed that the disease will be cured by the magic power of this drug.

8. Camel's grease is mixed with Harmal seeds (Peganum harmala) and the patient is exposed to the fumes.

9. Dragon's blood is given to patients in some neurotic diseases.

10. Some sacred places and buildings are visited by the patients in order to get relief from the disorders. Sacred tombs are places of mystical belief in Anatolia in Turkey.

The Trade of Drugs in Turkey in the Times of Ottoman Empire

Some important drugs have been produced and sold in Asia Minor since ancient ages. As Ottoman Empire dominated and controlled caravan routes through centuries, the share of the Empire in export of drugs was quite considerable. A great variety of drugs came to Turkey from Eastern countries. Furthermore, many drugs, such as, opium, alum, clove, were also produced locally and exported. The best kind of alum was Kutahya alum which was sent to Europe. Ambergris was bought by Western merchants from Alexandria, Beirut and Istanbul. Clove was also sent from Istanbul to Europe.

The best kind of cotton was produced in Adana and Silifke. Therefore, Anatolian cotton had a leading publicity in the field of trade. Opium was another important substance of Anatolia in the past. This drug is important even today.

Drugs that came from Eastern countries were transported to Ottoman ports on Persian Gulf or Red Sea and then they reached through caravans to our ports in Mediterranean. Furthermore, these goods were transported to Europe by Venetian and Genoese ships (17, 18, 19, 20, 21, 22, 23, 24, 25). By the end of 16th Century these goods ceased to pass through Turkey as big sea-routes were opened and the Dutch and English men had come to India. On the other hand, drugs that came from abroad acquired a national characteristic. For example, theriac which was prepared as an antidotal drug in Europe during long centuries, was used as Mesir. This drug acquired a national characteristic and was prepared in Hafsa Sultan Hospital in Manisa in the 16th Century. Mesir festivities have been celebrated and this preparation is scattered in Turkey on 21 March every year (26, 27, 28).

The method of banderole was applied to foreign drugs after 1890.

Medical Specialities in Turkey in the Times of Ottoman Empire

Turkish pharmacopoeias, which were written in the times of Ottoman Empire, included both simple and compound drugs.

Galenical preparations, such as, syrups, laxatives, tablets also called Qurş, infusions, decoctions, oils, pills, pastilles, powders and suppositories were present in these codices. Special moulds, called Tenzu, were used for the preparation of tablets. Sacred words were written on these moulds. An attempt was made to exercise a psychological effect on the patient. In addition to these, aphrodisiac drugs, called Nevruziye, which were prepared by head-physician, were offered to the Sultan on 21 March each year.

Some drugs from Western pharmacopoeias have been prepared in Turkey since 17th Century. Again, it was during this Century that some Western pharmacopoeias were translated into Turkish.

A few modern pharmacopoeias were also written in 19th Century. For example, Galenical forms, which were prepared with scientific techniques and were of Western origin, are recorded in Pharmacopee Militaire Ottomane. This book was written by Dr. C.A. Bernard in 1844. Another book Düstürür Edviye was written by Dr Huseyin Sabri Bey in 1874.

In addition, some medical specialties were developed in Anatolia in 19th Century. The first specialties came from Europe to Turkey. They were tested before they entered the country.

In the development of medical specialties, three periods can be distinguished:

The Monarchic Period: The first specialties were prepared in Turkey in that period. We can cite specialties like Pertey's syrup and wine and Elixir of Sureyya as examples at the end of 19th Century. Pertey's syrup is a famous Turkish specialty which was shown in the exhibition of Paris. This specialty received a prize. It was prepared by Ethem Pertey Bey, a famous Turkish pharmacist of that time.

The Period of Constitutional Government: Wieting Pasha, the director of Gulhane Military Hospital, brought about the first developments in the field of specialties in the period of Constitutional Government. The machines for making tablets were brought by Wieting Pasha from Germany and a wide variety of pills were prepared with these machines. Besides, small laboratories were opened during that period. The First World War created a pressing need for newer drugs based on scientific techniques. Rauf Bey, a pharmacist, achieved notable success in the field.

The Period of Republic: Significant improvements were made in Turkish specialties after the emergence of the Republic. The number of factories for manufacturing

drugs increased in Turkey after 1950 and today drug industry is one of the largest in Turkey.

Conclusion

Turkey is a country ir which a great variety of drugs are produced. It played a significant role in the trade of drugs through centuries. Moreover, the old forms of drugs that were recorded in old Turkish pharmacopoeias were also used for the health of people. But some modern specialties were prepared in 19th Century and the drug industry advanced after the establishment of the Republic in 1923.

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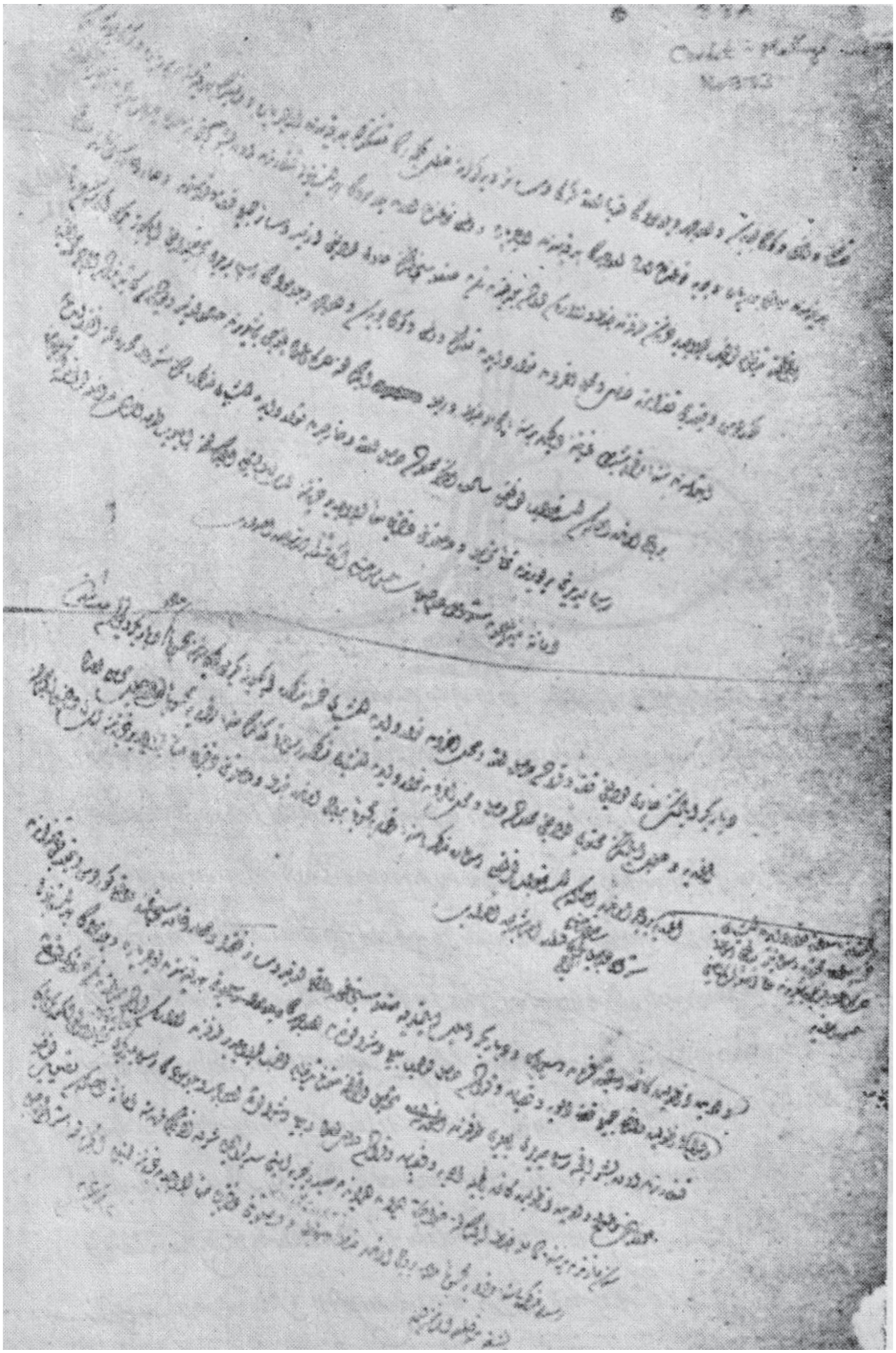

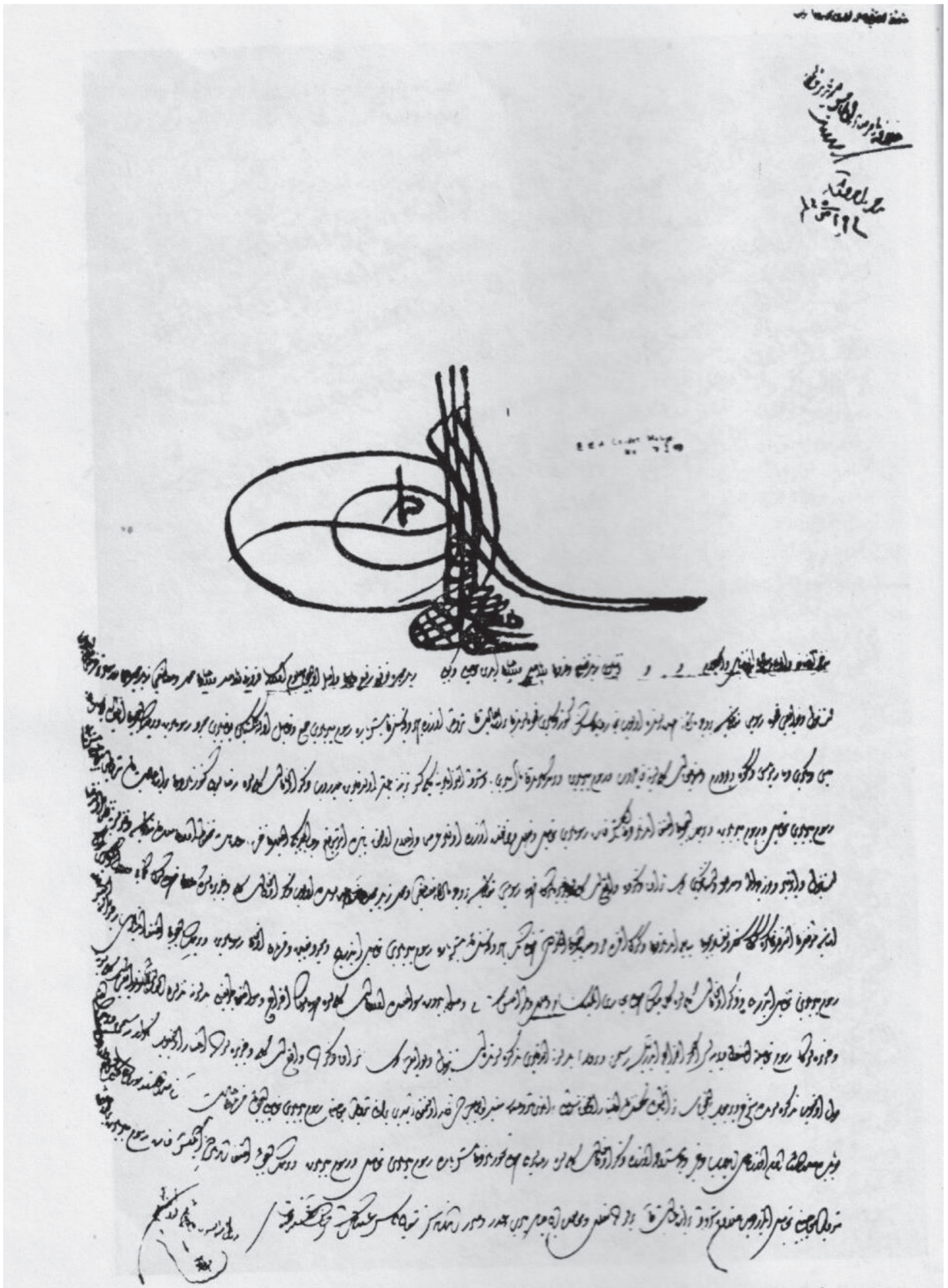

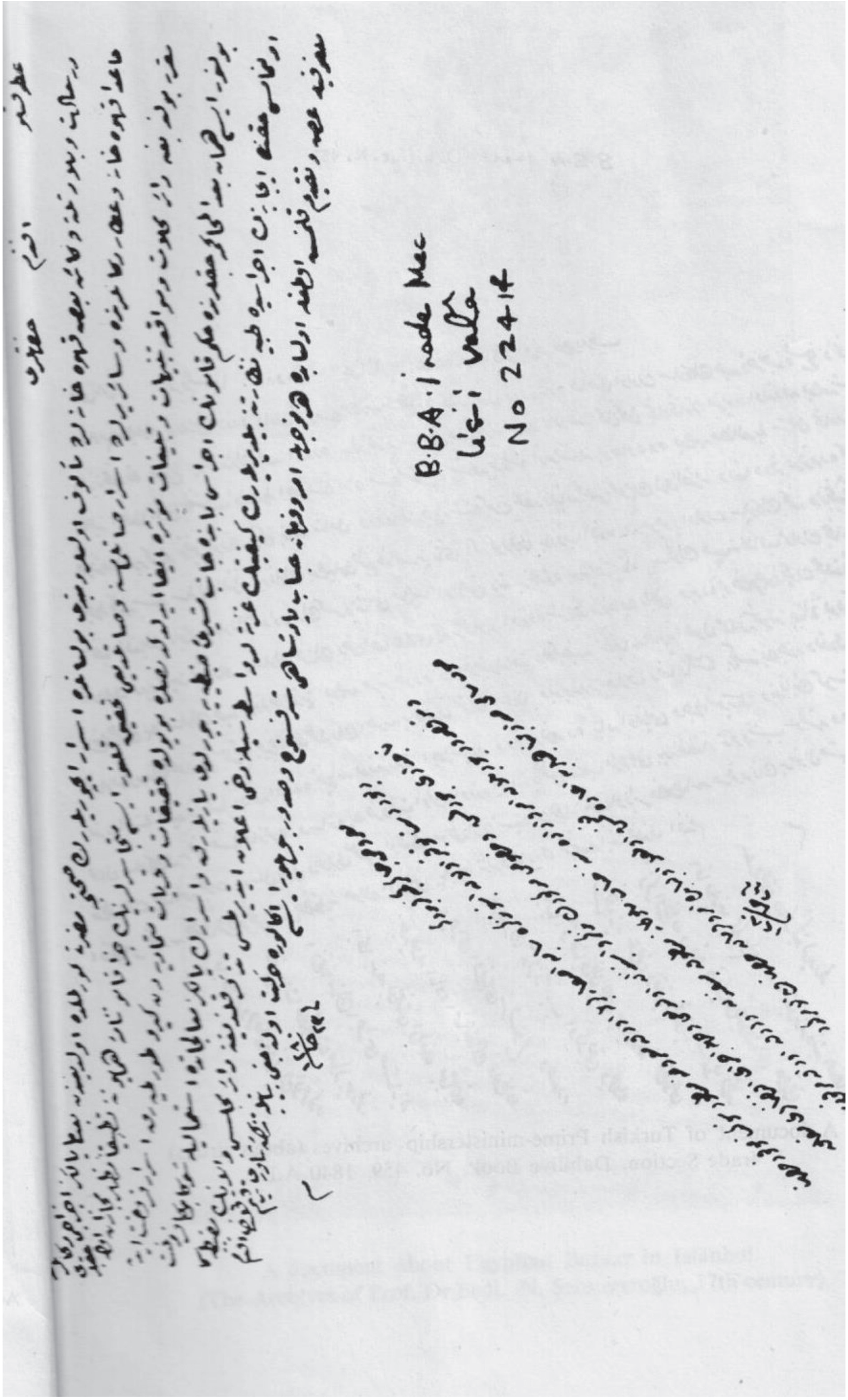
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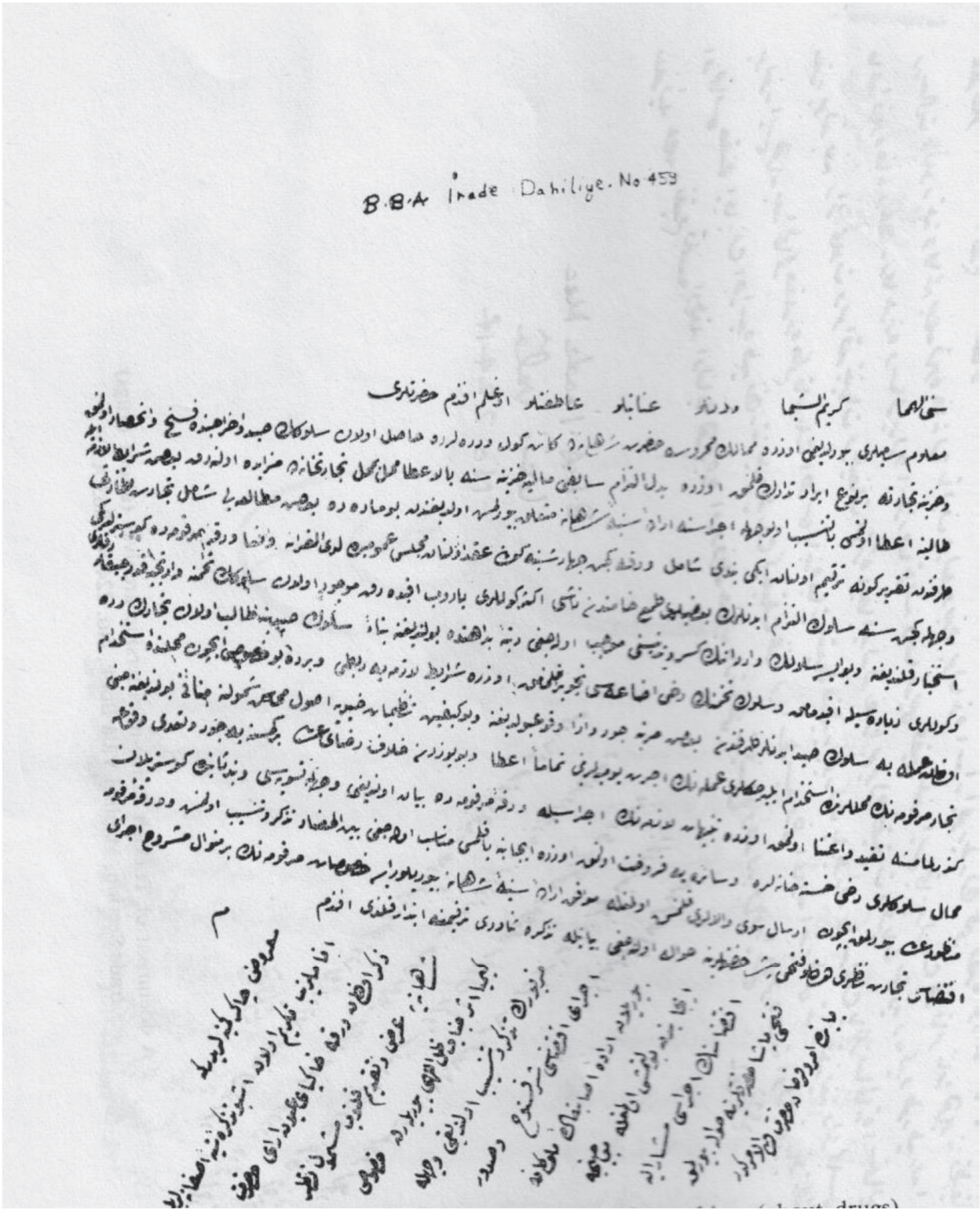
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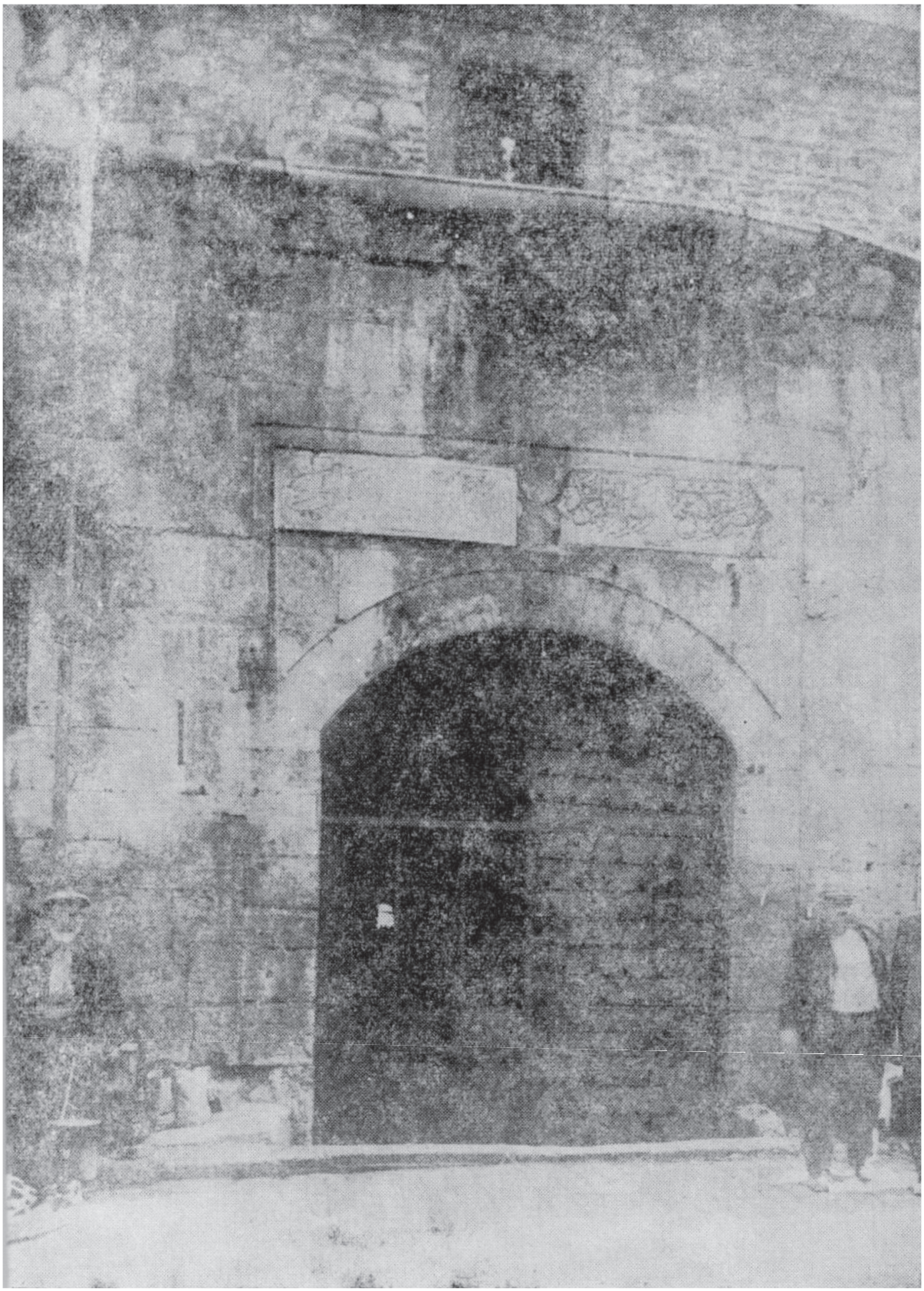

The Arguments of Supporters and Opponents of the Idea of the Elixir at Arab Chemists

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Summary

Introduction: Elixir is one of the main topics in ancient chemistry, where it is attributed to the elixir virtues in the treatment of all ills and symptoms, this is not an innovation in the history of chemistry, it is known that among the objectives of the chemical and its purposes are the preparation of drugs and the installation of drugs, and some went to prepare the gold solution and claimed that drinking restores the balance and heal diseases and away from aging.

Aim of the paper: The purpose of this research is to shed light on the truth of Elixir through history and understood by previous civilizations, mentioned the most important Arab chemists who believed in the existence of Al- Elixir and worked and presented their arguments from the literature and statements of proof of their work, also mentioned the Arab chemists who rejected the idea of Al- Elixir and fought against their work through their writings.

Al-Elixir in Arabic language: Elixir**:** What is thrown on silver or towards it and turns it into pure gold and that of the myths of the owners of old chemistry.

Elixir a drink that prolongs life as some claim

Materials and Methods: The historical approach has been followed in this research by reference to some important ancient chemical books, and books of translations of ancient chemists and philosophers: the book of *Kitāb mafātīh ar-rahma wa Misabah al-hikma* ("*The key of mercy and wisdom of lamps*) to the **Al-Tughrai**, the book of the **Gemara** in the *knowledge of the essences* of the **Al-Bīrūnī**, Book of the (*two ancient essences liquid from the yellow and white* of the-**Almahdani**, *Kitāb al-Šifāʾ* ***Ibn Sīnā*****,** book of (*science statistic)s* to the- **Alpharabius**.

Result: The concept of elixir was one of the main and main factors for the progress and development of Arab chemistry at the theoretical and practical levels. The Arab and Muslim chemists adopted the experimental method in their discoveries and chemical works and formed the basis of the modern chemistry pyramid.

Conclusion: The concept of elixir in ancient civilizations and its history throughout history has caused the development of Arab chemistry. The chemical scientists who believed existence of the Elixir, they prepared, and navigated in this science and they adopted the experimental approach in preparing it.

Some chemists, on the other hand, fought the idea of the Elixir (Elixir converting cheap metals into precious metals, elixir of life).

We are among the foes and supporters of this science and we respect the efforts of the early scientists who brought us to the development of the current science.

Key Words: Elixir**,** Chemistry, opponents, Sayings, supporters, Arguments, **Jābir ibn Ḥayyān, Ibn Sīnā**.

Introduction

Al- Elixir is one of the most prominent concepts in the old chemistry industry. It is considered the main engine for the development of this science and its thrust forward, especially at the beginning of the emergence of Arab chemistry. If we want to explore the word "Elixir" and its origin, we find a divergence of views and attitudes. Some refer to the ancient Greeks, where the meaning of the word was actually "extracted". While others return to Latin and connect them by "chose", and there are those who make the origin of the word in Arabic meaning broke, breaks, Cracking, which is the opinion of **Jābir ibn Ḥayyān**.

The term "chemist" has become synonymous with the philosopher's stone. It means that the precious metals are converted into precious minerals such as iron and copper, gold and silver. Chemists find that the elixir is the outcome of chemical work. It can only be obtained under very special conditions. Therefore, they were keen not to reveal the methods of obtaining it only to those who are entitled to what may be achieved by the wealth of their opinion, and cannot be obtained except under very

special conditions and after hard efforts so it was keen to not disclose the methods of obtaining it only to those who are entitled to what may be achieved by the wealth of their opinion.

Importance and Purpose of Research

This research aims to shed light on a subject of the Arab scientific heritage in Islamic civilization, related to the science of ancient chemistry, which is the subject of al-elixir, which is the most important term mentioned by the ancient chemists and one of the most controversial topics**,** where the Arab chemists divided into two parts of them believed the existence of the elixir and quest to prepare, and some of them rejected the idea of the elixir and fought the work of it, we will talk about the most important scientists from each stream and we will remember one book for each of them.

Al-Elixir in Arabic Language

Elixir: الإكسير an Arabic words means what is thrown on silver or towards it and turn it into pure gold and that of the myths of the owners of old chemistry.

2-Elixir: A drink that prolongs life as some claim.

The Scholars Who Believed in the Existence of Al-elixir and Believed in it

Among the owners of this trend that it is possible to convert cheap metal to precious metal noble by adding the material of the elixir to it and some of them prepared of this and in their opinion requires the order of metals in a special system depends on the balance of the nature of each of them It is not possible to convert a metal to another metal except in order, so that an element cannot be transformed from a higher order without passing the intermediate rank, if it exists, then the copper must turn into silver before turning into pure gold

We mention from these scholars:

1. Jābir ibn Ḥayyān (120 AH / 727 AD)

Jābir ibn Ḥayyān believed in the theory of the four elements and the theory of the four natures, which established the possibility of converting barely metals into precious metals. The most important thing **Jābir** provided for chemistry is the experimental method developed by European scientists centuries ago

He says in his book: "*Kitāb al-khawāṣṣ al-kabīr*":

"I have done with my hands and my mind before and I searched for it until it has become true and tested it didn't lies"

Jābir defined it elixir depending on its color, we find it says:

Elixir: "It is the thing that glows the eyes of the vile dissolved jewels into the eyes of virtuous dissolved gems"

2. Abū Bakr al-Rāzī (251- 320 AH / 865-932 AD):

Al- Rāzī followed **Jābir** s footsteps and knew the processes and chemical tools as **Jābir** did. **Al- Rāzī** managed to develop chemistry, regulate it and increase it with his theories; thought about the possibility of preparing the elixir, late chemists such as **Jildaki** have pointed out in his writings of **Al- Rāzī in** Al-elixir.

3. Ali Ben Moussa Andalusi/ Abu'l Hasan ibn Arfa Ra's (..... - 500 AH / ..... – 1111AD):

We have defined the **Andalusi** approach in the preparation of the elixir through our manuscript "**book** (*end of the request to explain the acquisition*) **of the Jildaki"**

Where **Andalusi** mentions in a place of his divan how to select the world for the stone and began preparing the elixir says:

فيلتقط من بين الخبائث جوهراً ولكنّه عن وضعها معاذي
فيخلطه بالسّحق من بعد غسله وتجفيفه بالرفقِ أي جذاذي
ويحرقهُ بالماء والنار برهةً ليظفر من إجرائه بغذاذي

4. Al-Tughrai (453-515 AH / 1061-1111AD):

Al-Tughrai made many efforts to try to convert cheap metals from copper and lead to gold and silver

And he spent a great effort and money for this, and wrote the tyrants of this work and mention of that in his book "*Kitāb mafātīh ar-rahma wa-asrār al-hikma*":

"**This science was not intended to conceal, and to bring the clear minds to the long thought, where used all the**

so-called when the rulers of the places of misuse of the use of common names and synonyms and skeptical and take the separation of the object or its special or public took place of the thing, and he deleted the arguments needed to mention, and the substitution of the meaning of one in the long speech, and neglect the bars of contradiction in the most topics so that the mind in their narratives contradictory phenomena, in fact, it is not contradictory, because inconsistencies are not fulfilled, the use of cases is not limited and often the total issue is personal,

If they say in their words pigmentation or dissolve or complicate every single body and if they say: If not composite of everything has nothing of it is one thing".

5. Abu al-Qasim al-Iraqi (6th century AH, thirteenth century AD):

His most famous books in chemistry are "**The Book of** (*Acquiring in the Cultivation of Gold)*," in which he defended the possibility of converting precious metals into gold. Although his method of preparing the elixir was unclear, he cited **Jābir** and his predecessors; He referred to his own experiments and the book distinguished as a clear picture of what chemistry was at that time. **Abu al-Qasim** mentioned in the introduction book:

"I made this book, saying the science of the chemistry industry and its work of the Hyle, which refrained from working to establish evidence of the industry, mentioned the quantity and quality are summarized and detailed. Then I came to each chapter with certificates of philosophy to be approved, and concluded the book in which it showed what the symbols, and it is sufficient to facilitate the reader to solve their problems and dilemmas and made all this in five sentences containing nineteen chapters and God success".

The scholars who rejected the idea of elixir and fought against the work of it:

These scholars rejected the idea of searching for the elixir, and some of them even went to reject attack and reduce it, and accused the workers of the chemistry industry of magic, clues, puzzles and so on, and denied a change in the essence of metals. Rather, it is a visible change in the shape of the metal and its image, they explained that each element has its own structure, which cannot be changed by special conversion methods.

We recall the scholars who nullified the idea of the elixir:

1. Ya'qūb ibn 'Isḥāq al-Kindī (185-252 AH / 801 - 873 AD):

Al-Kindī opposed the idea that it is possible to extract precious or precious metals, such as gold, from abrasive metals. This is confirmed by Al-Taba'a, where he said in his **kindī book** *The (Philosopher of Arabs and Islam):*

"**Ya'qūb ibn 'Isḥāq al-Kindī** wrote a letter in it, and made them two articles mentioned the inability of people as nature alone did, and deceiving the industry and tricks, and translated this letter to invalidate the plaintiffs claim gold and silver non-metal".

2. Alpharabius (257- 320A H / 870- 950 AD):

In the Book of (*Science Statistics),* which consists of five chapters, which concerns us the fourth chapter, which is natural science and divine science.

Alpharabius says in natural science: **"The science that looks at the natural objects and the symptoms and their strength in these objects, and objects, including industrial and natural.**

Industrial Such as glass, sword and bed. All in all, his existence in industry and the will of man. And the natural is that doesn't exist neither industry nor the will of man, such as heaven and earth, plants, animals and metal".

3. Abu Muhammad al-Ḥasan ibn Aḥmad ibn Yaqub al-Hamdani (280 - 360 AH / 893 - 973 AD):

Authored a book "*book of the two ancient essences liquid yellow and white*" around the year (33 AH / 942 AD), which talks about the properties of gold and silver and the mechanism of their manufacture and the work of gold and silver coin in Yemen, and how to detect money and alloys and false jewelry,

Where he devoted a door called the door of cheating gold and silver, rejecting the idea of metal conversion, although not explicitly mentioned in another section **Hamdani** talked about how to extract gold and silver and tools used with some illustrations.

In another section he talks about the medical benefits and side effects of both silver and gold.

The previous book represents the wide range of technical and technical development of Arab chemistry in the Arabian Peninsula.

4. Ibn Sīnā (370-427 AH / 980 - 1137 AD):

Ibn Sīnā discussed astrology and some of the prevailing ideas of his time in some aspects of chemistry, and contradicted his contemporaries and those who advanced on him, who said that some low metals could be converted into gold and silver. He denied the possibility of this transformation in the essence of metals, but it is a visible change in the form of its metals and its image, explained that each element has its own structure that cannot be changed by known conversion methods.

He was one of the opponents of the idea of Elixir and said in this:

"As for the claim of the owners of chemistry, we must know that it is not in their hands to turn the species into a real heart, but in their hands they have a sensory resemblance, so that the red will pour a very white, silver-like pigment and dye it with a very yellow gold-like pigment and dye the white, that the white dye any dye that looked so like gold or copper, And to take away the bullets with the most deficiencies and defects, the jewels are lucky, but it is overcome by the usefulness of the way it gets stuck in its time."

5. Abū Rayḥān Muḥammad ibn Aḥmad Al-Bīrūnī (362- 440 AH / 973 - 1048 AD):

Al- Bīrūnī did not believe in the conversion of minerals. He rejected this idea and refuted it. He even mentioned a method of distinguishing metals from one another. He cited an example of the distinction between gold and iron

Where he said in his book (*Gemara in the knowledge of gems*):

"And when gold is attributed to other weight is not equal in size, and caliber be in iron, and the proportion of the size of iron to the size of gold equal weight of one hundred and one fifty to sixty-three, convince you that the scales of your balance equal weight, deliver the two pieces together in the water and brought them out of the water and found the cuff of gold to be swollen, because the income of the water is more than the income of the other cuff, and God knows best."

6. (/ˈɪbən kælˈduːn/ Ibn Khaldun (732-808 AH / 1332-1406 AD):

(/ˈɪbən kælˈduːn/ Ibn Khaldun was one of the most vocal opponents of the idea of preparing the elixir even he launched the most violent attack on scientists working in the work, where he said:

"I know that many of those who are unable to make a living carry their ambitions to impersonate these businesses and see that it is one of the doctrines of the pension and its aspects and that the acquisition of money from them easier and easier for its beneficiaries, but they were tempted by the view that gold, copper, tin and silver, they think that it is one of the possibilities of science nature, and in the treatment of this different ways to because of their differ doctrines in the measure image and in the material they have for treatment named with the precious stone, The investigators claim that this elixir is a composite material of the four elements in which the special treatment was obtained, either disguised phenomenon of silver or gold or copper in silver or mixing them on the proportion of one or two parts or three or hidden as a similarity between metals for the industry such as whitening the copper and softening with ascendant lubricate , and a similar metal body With silver, But who crib this industry and did not satisfy the case, but denied it and defended himself from spoiling the Muslims and their money, ask for the transfer of silver to gold and lead and copper and tin to silver so in the treatment and with the elixir obtained, we have with them a speaker and looked at their perceptions".

Results

1. The concept of Elixir was one of the Basic and main factors of the progress and development of Arab chemistry at the theoretical and practical levels, as we have cited the work of scientists and their works in Arab chemistry, where they have lost an era of their presence and their scientific and cultural contributions until the end of the Middle Ages and the beginning of the European Renaissance, where we can say with all satisfaction that the concept of Elixir was one of the main engines of the Arab chemical mind, which arose with the emergence of Arab chemistry and continued until the late eighteenth century AD.

2. Arab chemists adopted the experimental method and established its foundations, and this is what we found in the scientists who support the idea of the elixir and who sought to prepare it, and mentioned the methods of preparation in their books.

Conclusion

Arab chemists had a clear and distinctive influence in the history of the Arab-Islamic civilization by the emergence of a number of scientists who left in their writings the foundations of the development of chemistry. The work of one of them was complementary to the work of the other century after century. The data in this article are still listed as a prelude to a broader study on this subject, taking into account the analysis work some details bring in the context of this research.

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Breast Lesions and its Treatment in Avicenna Medicine

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Summary

Breast Lesions are considered among famous diseases attack especially females. For instance, breast cancer attacks one among seven women. The aim of this paper is to shed lights on the achievements of Avicenna in the field of breast diseases which were known at that time, and to compare them with those known now, to recognize the existence of some factors (dietary, environmental, hormonal…) take part now in inducing some kind of breast diseases. Avicenna talked about Galactorrhea, which is milky secretion from the breasts. The term now usually refers to milk secretion not due to breast-feeding. It is bilateral and from multiple ducts. Also, he described what is called now fibrocystic breasts, which characterized by lumpiness, and usually discomfort in one or both breasts. The condition is very common now, and benign, meaning that fibrocystic breasts are not malignant (cancerous). Avicenna mentioned to what is called now the Inflammatory Breast Cancer, which is considered now as an especially aggressive type of breast cancer that can occur in women of any age (and, although extremely rarely, in men). It gets its name from the red, swollen, inflamed appearance of the breast, as was described by Avicenna.

Key Words: ????.

Introduction [1-4]

Avicenna (Ibn Sina) is Abu Ali al-Hussein, titled Sheikh the President. Avicenna was born in 370 Al-Hijra, (980 AD) in the village of Afshana, near Bukhara in Turkistan, or what is now the Republic of Uzbekistan. At the age of 21, he left Bukhara to spend the rest of his life travelling among various Persian cities. When he died in 1037 AD, he was considered one of the geniuses of philosophy in Islam, and in medicine he was placed in the rank of Galen, where he was called the Galen of Islam. Avicenna wrote 276 books, all written in Arabic, except for a few small books he wrote in his Persian native language. Unfortunately, most of these works have been lost, and have not reached us. There are currently 68 books scattered among east-west libraries. Avicenna's most important book of medicine was al-Qanunn book, which is written in Arabic, and was described by William Osler, as the most famous medical textbook ever written. This book is unique, representing a document containing all medical sciences from ancient times (such as medicine in ancient Egypt, Greek, and Indian medicine) to Avicenna era. This book was characterized by its presentation of medical topics according to a systematic plan, which is very close to what modern medical textbooks follow, especially with regard to the way diseases are listed in terms of exposure to the classification of diseases, and then mentioned their causes, symptoms, signs, and incidence, and then mentioned their treatment and prognosis. We can say that the good order and comprehensiveness of the book of al-Qanunn made it the most widespread in the medical scientific community, in both east and west, until the late 17th century. The West scholars knew the Qanunn book through the Latin translation of it by Gerard of Cremona (1114−87). In the 15th century, it was also translated into Hebrew, and printed several times, most recently at the beginning of the nineteenth century. Al-Quanunn book remained in use, especially at the University of Louvain and the University of Montpellier, until the late 17th century.

The Importance and Aim of the Research

The importance of the research comes from the fact that; so far no such research has been carried out, and given that there are many modern medical literature, whether Arabic or non-Arabic, that talk about breast diseases recently, but they do not address these diseases historically, so the purpose of this research is to identify

the most important achievements of old Arab and Muslim physicians, especially Avicenna, regarding breast diseases and their methods of treatment, in addition to identifying breast diseases, that were known a thousand years ago. To compare that with what we now know of these diseases, helps us to know how many factors (dietary, environmental, hormonal....) may now play a role in some breast diseases. Avicenna's writings in this area were chosen in view of the good order and careful approach followed in al-Qanunn book.

Material and Method

Avicenna devoted a full article of the 12th art of the third book of al-Qanunn Book to talk about breast diseases; In this research, I followed a unified approach that included reviewing all the topics in which Avicenna talked about breast conditions and diseases, and then discussed these diseases according to the data of modern medicine. It is noteworthy that Avicenna, when he talked about breast diseases, adhered to the same approach he followed in his talk about various diseases of the other organs of the body; where he started talking about breast anatomy, and showing his function, and then talked about the various diseases that affect this organ. I will successively review the titles mentioned by Avicenna in that article.

I. Breast anatomy

Avicenna talks about breast anatomy in an independent title: "We say breast is a member created to form milk, from which the baby feeds on since his birth until he is in control and grows stronger and fit to digest strong, dense food. It is a composite body of veins, arteries and nerve that fills the defect between them in sensory glandular flesh, white if the blood resembles what they feed and white what separates from it to a building, and measures it to the milk generated from the blood measure the liver to the blood generated by the lymph in that each one refers moisture to its similar nature and color. The liver reds the white lymph with blood, and the breast whitens the red blood of our milk. The veins, arteries, and nerve in the core of the breast branch out to the end of the hole, and have many twists and turns. The participation of the uterine and the breast in the veins of spasm between them has been stood by, especially from the autopsy, the anatomy of the veins." We conclude that Avicenna pointed out in this chapter that the function of the breast is the formation of milk, the food necessary for the newborn, in addition to the most important components of the anatomical breast are nerves, arteries and veins linked by glandular tissue, as was thought at the time [6.7].

II. Enrich of the milk

Avicenna says: "Know that milk increases with the abundance of good blood, and if it decreases, it is caused by some reasons for the lack of blood or the loss of its quality. Or it may be against the generation of blood on it, causing it to become dry and excessively cold, or it may have gone to another side, such as hemorrhage, swelling, or other things. Moderation that is good for blood, or otherwise. As for the reason that loses the quality of blood and spoils what is generated from it, it is not valid for milk blood to be generated from it, if milk is only generated from good blood, then it is the predominance of one of the three mixtures yellow, phlegm, or black. Yellow is the yellow color of milk, its softness and its attractiveness. Phlegm is very white and tends to be acidic in its smell and taste, and black is due to its thickness, scarcity and strength. Referring him to squeezing it and this is one of the signs of which are not hidden. Like a thread, it makes the blood, even if it is abundant, is not praiseworthy in essence, nor is it suitable for abundant milk to be generated from it, and what is generated from it from milk is not praiseworthy, and if you know the reason, you will see the face of cutting it. Poppies and udders of goats, sheep, and the like. Just as everything that dries up semen, reduces it and prevents its generation, it also reduces milk, such as the shahdang. And if the reason is a lot of sports, you reduce and enjoy it. And if the reason was a lack of blood for hemorrhage and the like, she would lock him up if his bleeding was from the lower to the upper. The reason is a bad mixture, which is often emptied with what is required in every mixture, and made the bile food of the temperament of women tends to cold and damp. What benefits them is barley water with julep, as well as cucumber seed as a syringe and cucumber seed, eating brains, drinking cow's milk, goats, radish, goat meat, fattened chickens, and al-Ahsa taken. From the stall of barley with milk and the broth of the gardener's mallow, and I made the management of phlegm mood with foods and medicines that are heated in the first to the second with moistening or lack of drying. Such carrots, watercress, zaryang, dill, wet celery, and sambron, especially wet without dry, are heated and dried and made from flour. Wheat with fenugreek and

rosemary. From what we mentioned, great hydration. And you also know the gender of the dominant black and manage according to it. And among the moderate and heavy-duty medicines for coffee is to take thirty dirhams from palm sap, twenty dirhams from rasyang leaves, fifteen dirhams from the wet, and twenty-five dirhams of mashed wheat, and from peeled chickpeas and from bruised white barley, each one eighteen dirhams. Of the large figs there are ten in number, boiled in thirty pounds of water until it returns to eight pounds or less. The drink is five ounces with half an ounce of sweet almond fat and an ounce and half of Soleimani sugar and salt fish, which is rich in milk. Sesame flour, dipped in pure syrup, filtered, drunk, and heavy on the breast. Also, it is taken from the hollow of the eggplant, as much as half a cape, and boiled in water, boiled heavily, and then poured into a heavy moorage, filtered, taken from a strainer, and put on it an ounce of ghee and drunk, or chickpeas are soaked and drunk on an empty stomach for days, especially soaking it in milk and barley water with honey or jellab, or taken The moist seed is one part of the gelnar, and the drink from it is wheat in hot water, or he drinks from dairy seeds the weight of two dirhams with a drink. It is good medicine to take an ounce of cow ghee and from the drink a large cup and water on an empty stomach the rods of anemone and its leaves cooked with barley grass, or taken Radishes and bran are boiled in syrup, and that syrup is filtered and drunk. Or fried poppy seeds are taken with the stalk parts, whether with stingibin or mebkhetj, after they are soaked in whichever one is for three days. One ounce, and from fenugreek seeds and wet seeds, parts, whether mixed with raspberry juice and drunk, and if mixed with honey and ghee, it is better" [5].

This chapter is consistent with what is now known as inducting of Galactorrhea. It is clear that most of the means that were used to achieve this purpose have been invalidated, but it is now resorted to treat the cause that leads to the lack of milk secretion, which is often due to a disorder of endocrine secretion [6,8].

III. Reducing milk and preventing excessive milk

Avicenna says: "If the milk is over-supplied, it hurts and tumors and brings diseases. Milk may meet in the breast without a rope, especially if the menstrual retention is gone, so the substance that does not find the momentum of the uterus has gone away because it has decreased and got into the mast so it became a building. Milk may have met in men's breasts, especially adolescents, when their breasts were destroyed. I have learned from the above the reasons for the lack of milk, and the Mayor has everything that is severely dried with drying or the intensity of its analysis and heating, and all that cools as well. Highly hydrated moisturizers also reduce blood from the amount. All semen-reducing drugs are coffee-reducing. Cold ones are like lettuce, lentils and small. One of the paints is the juicer of the al-Bazar tree, cotton, its saliva, lettuce, etc., and the flour of the bakula with the fat of roses and vinegar. As for the neighborhood, it is like the melting and the button, especially the mountain attraction. Like the Fengenkecht, Bezer and Sharba, it was worth two dirhams. It is more correct than the ba'arouj that it is reduced by milk, although some say that it is enriching milk. The cumin is especially mountain dried for coffee as well. And also if you paint it with vinegar. One of the warmest coatings of drink, which has been tried in this sense, is a good coating that takes the origins of cabbage, knocks, kneads and incorporates it. Or lentil flour, al-Bakly, saffron, couscence and salt, painted with rose water. It is also painted with ring juicer or balk, bitterness and rose fat. The property is being painted with powdered marine cancer or burning river cancer." This condition is currently known as Galactorrhea milk. It is a condition that appears at high frequency in women with pituitary tumor (prolactinoma) - the most common of the most common aversion pituitary tumors - and appears less frequently in men. The milk is associated with a number of conditions. The production of regular milk from the breast is controlled by a hormone called prolactin, which is secreted by the pituitary gland in the brain. Any circumstance that disturbs the balance of hormones in the blood or the production of pituitary hormones by sexual organs can stimulate prolactin production. Often, a patient with a high level of prolactin in the blood. A tumor in the pituitary gland can cause this increase in prolactin. At least 30% of women with milk synoecizes have unusual menstruation with high prolactin levels and pituitary tumor. Milk ggalactorrhea can also cause other types of brain tumors, head injuries, encephalitis, tumors or growth rates in the ovary or other female genitals, or in men's testicles or reproductive organs that can also stimulate prolactin production. The condition is currently treated with the treatment of the cause [7,8].

IV. Milk is cheesed in the breast

Avicenna says: "this could be resulted from dried heat, or may respond to a frozen cold, and you know

from the above you mentioned the mark of each of the two things. And the fluid medicines of waxing in some gentle paints such as charity fat, mint fat and so on. The paint with the crushed mint and the paint on the hot with my cours of cold saliva, cold fats, filtered wax, cabbage, wet and foolish pulse are very useful. One of the drugs analysed for spicy cheese is wine vinegar multiplied by heated roses painted with it, or crushed fox grape leaves, or canking paper, fox grape leaves and cabbage leaves or juicers, especially if mixed with bitter and saffron, as well as wine vinegar, violet fat and a little arena from which to take paint. One of the drugs analyzed for cold cheese is the permanence of water, and it is forbidden to cook razyang and eat razyang button, dill and all medicines that generate milk, which is cooked chamomile, dill, ant, ring, qaisum and gendipster. One of the fats is the tooth and the narcissus fat or the fat of the premium. A good moderate medicine is to take wary bread, barley flour, watercress, fenugreez, marshmallows and a handful of crushed linen buttons and take a bandage. Swelling after cheese is useful to put a sponge dipped in lukewarm water and vinegar or pass with bread collected with water, vinegar, mint with vinegar, good wine, and crushed marquitha such as dust with rose fat and egg whites. It is useful to open the milk dam in the breast to be painted with maps or bitter water with foting water, anison, chickpeas flour, bay leaf, celery button, nabati cumin and al-Qaqli with shepherd's stick water, as well as boiling water, wheat and chionese, as well as cander with bull's bitterness, or take milk honey and mix with violet fat and wipe the breast in the milk and tumor, and sipping cabbage water is useful in this."

This condition corresponds to what is now called galactocele, caused by milk clotting in the milk ducts of the breast. Galactocele is a cystic tumor containing milk or milky substance, and is often found in the mammary glands. The shell causes a stopper protein that blocks the exit. Galactoceles are benign injuries and are not a cause of cancer. Galactocele may be infected resulted in what Avicenna called burning milk. This condition is currently treated with antibiotics and surgical removal when conservative treatment fails. [8]

V. The rigidity of milk in the breast, its spoilage, the extension to which it is exposed, and the disease that affects it

Avicenna says: "to treat this condition is to take the boil and cook until it is cooked and then collect the bread door, bakula flour, shirg fat or add bread and a mattress called wet bardanmetric with wax, rose fat or bread, water and oil with honey, sesame, syrup or synapse, repeating the dressing in any of them two or three times a day. As well as sesame with honey, margarine and honey, mixing with it khashkar or bakula flour was useful. The freezing of hot water and the breast's kebab on its steam, especially if cooked with a linen button, milk, marshmallow, forge and chamomile. It is also useful for those who have not tolerated bandages, and the offer of this, with this bandage, has benefited. Its version: Mash and The Raisin, fedacan and kneaded with cypress water and similar water, and if you bring blood in the breast, let him date it with the fat of violets, then pour hot water on it, and then add the bandage mentioned in the first door, it is useful."

This condition is in fact the same as the previous one, known as Galactocele, especially when the alveolar develops sepsis, which is treated as we mentioned with antibiotics and then surgical removal when conservative treatment fails. [9]

VI. Hot breast tumors and the nipple pain

Avicenna says: "As for its initiation, the use of known deterrents, which is the treatment, and to mix a few palliatives, such as freezing with a wine vinegar with hot water or a little fat and roses, and the flour of the basalba with singbin and the paper of the fox grapes with roses, if he exceeds the beginning a little, then he will be treated with a bandage mentioned in the door of extension and blood immobility. It is very good to take a medicine as such, and its version: to take the bakala flour, the king's wreath crushed and sesame fat to be painted with fresh water. Also, it is taken with crushed bread, barley flour, bakala, fenuqué, marshmallows, egg wipes, saffron and bitters. It also takes a coating of linen button that is crushed with vinegar, and the painter often dissolves into a tumor in the breast and is the subject of fear of the side, so he occupied to collect a cotton button placed on top of the tumor without around him, and put around the bottom of the pioneers, and does not stack at the beginning of the pain, the thin decomposition remains a mistake, and if the nipple is sore, it will repel and fall like sandals and acacia so that the cancer does not occur." [5]

This condition represents breast abscess, or inflammatory breast cancer. Breast abscesses are currently divided into two types: lactation abscess, and occur as a result of a secondary bacterial infection of the milk collected in a milk channel as a result of blockage. It can

occur anywhere in a woman›s breast. The abscess goes through two phases; the first stage is cell inflammation, accompanied by pain and redness in the abscess. The second phase is the formation of a purulent cluster with the abscess. The second type is that of near the nipple abscess, which occurs as a result of a secondary bacterial infection of secretions collected in one of the expanding milk channels, or one of the breast bags, usually next to the nipple in middle age. Both cases are treated with surgical drainage. Inflammatory breast cancer is one of the most severe types of malignant tumors targeting women because of its rapid spread, which exceeds other cancers, because of its worse external form, as well as the need for complete eradication to get rid of it. In this chapter, Avicenna was also exposed to nipple lesions from inflammation and cracks.

VII. The breast phlegmon cold tumors

Avicenna says: «It is useful for them to beat the celery and place on it the crushed chamomile and the wreath.» [5]

This condition may be what is currently known as cystic fibrosis in the breast, galactocele (lactic duct expansion), or Fatt Necrosis. Cystic fibrosis in the breast, or what has been termed fibrocystic changes because it is not a disease but only cystic fibrosis, is present in 50% of women after a certain age. It is the most common healthy breast lesion, a most painful lesion that occurs between the ages of 20-50 years. By clinical examining, there are two-sided cysts of different sizes, and the diagnosis is confirmed by ultrasound, where cysts filled with liquid appear. [6,9]

VIII. In the hardness of the breast, glands in it, and the great size presented in adolescence:

Avicenna says: “When the breast tumor deviates to hardness is not useful in starting with rice soaked in a drink, or being scrubbed by violet fat and egg yellow. If the tumor is solid, paint with a carotid of wax, rose fat, tar and eucalyptus water, they may make the bull bitter. They may be treated with tannins, and may have made my old cooked deride or vinegar drade painted. As for the goods and glands in it, the best medicine for him is to take wet peach paper and wet melt paper all beating and stretching them. If this is a consequence of teen disabusing or then an accident and a failure to analyses medications, it must be slowed down until the grease reaches and then comes out and sews.” [5]

Breast hardness means cystic fibrosis, which was talked about in the previous paragraph. The condition of teen cubism or enlargement that Avicenna talked about is what we call the gynecomastia of adolescence today. It is a normal condition if inflation in the breasts is in adolescence, due to fluctuating levels and low levels of testosterone (male), allowing estrogen (female) in the male›s blood to show its effect on the breast. [8]

IX. Breast Abscess

Avicenna says: «If a whole tumor is presented in the breast, it is a good medicine to be taken with linen button, sesame, the origin of the sussan, the water, the goat›s seed, the pigeons, the tarantula and the rityang parts, both as required by watching the saddle, charity fat and cow›s leg marrow. If you want to make the melon in it, and if you need surgical incision, you will, as you know.» [5]

There is no doubt that this condition is also a breast abscess. Evidence that Avicenna pointed out for his treatment is his development by putting some vegetable preparations, otherwise he cuts the abscess. Breast abscess, which is currently being treated with antibiotics and then the incision, has already been talked about. [9] [7]

X. Breast sores and erosions in it

Avicenna says: «To treat it; tannins weigh 20 pounds and make tannins a pound of tannins, non-fresh tannins half a pound, a half-pound silt and a cypress nut, soak it in a drink and leave 20 days and then cook and whip wood from the cypress until half goes, and then passes hard and drains and returns to the fire until thickened, and let the fire be very soft and kept in a bottle. This is good for all sores in soft organs such as mouth, tongue, etc., and prevents and repairs ingestions.» [5]

This description by Avicenna may apply to Paget’s disease of the breast, a type of cancer that affects the nipple, and causes chronic inflammation that may lead to discoloration and color change in the surrounding area. Its symptoms are similar to eczema. [9]

XI. keeping the breast small, and preventing it from falling

Avicenna says: «Those who want to keep their breasts small reduce the entrance to the bathroom, as well as the boys. This drug that we describe is good in that sense. And its version: to be taken from the sponge and the clay of Qameulia from each one dirham kneaded with water

with the button of the beet and mixed with some of the fat of the mastic and painted with it and lasted on it a linen rag dipped in cold tannins water, especially if relaxed. Women have also tried free clay and honey, although making opium and cheap bread were stronger in that, and this medicine that we described as what we tried. And its version: to be taken from the free clay weighing 20 dirhams, and from the hemlock the weight of two dirhams takes from it a coating of vinegar. Other: Chamos clay, aqaya and avidage are taken painted with the juice of the bing tree or taken kinder and tender and barley flour kneaded with very cultural vinegar and painted with breast for three days. Or take the eggs of the domes, patina, water and alkali and paint with water with cotton button or painted with hemlock hashish as it beats and collects vinegar and leaves three days, and if it wants to dry make it a sponge dipped in water and vinegar. Another: The juice of the tarathith, the pomegranate peels and the burnt bullets with sulfur are taken from each one three dirhams, a Yemeni youth, a lead adage and a burning lentil from each one, a spiral of a veal of three dirhams, kneaded with the water of the lamb›s tongue and painted. Or take cumin with the origin of the sussan, honey and water and leave on the breast three days or take the hardest and chocran and make it three days, or Chocran alone nine days. One of the reasons mentioned in this section is to paint with the blood of the pig›s memories, the blood of the hedgehog or the blood of the turtle, or tortoise blood, or to take oil and powdered slippers such as kohl, and to make a mortar of swarms until the lead dissolves and continues to date with it, as well as free clay and radish tannins collected with honey and painted with breast, and the peel of the cander and pomegranate peel painted with vinegar." [5]‖

This chapter is in the field of breast plastic surgery, specifically reducing breast size and preventing it from drooping. It is now known that many women suffer from drooping breast (pendulous breast), although its size may be normal or even less than normal. The cause is usually post-lactation. The more times breastfeed, the more drooping. The treatment of such cases is currently breast lift operations, in which breast sagging is repaired by lifting it while maintaining its normal size [8].

Results and Discussion

Through this search for breast lesions and treatments in Avicenna medicine, we can conclude with the following results:

1. Avicenna spoke about what is now called galactocele, which is caused by milk clotting in the milk ducts of the breast. Galactocele is now known as a cystic tumor containing milk, often found in the mammary glands. The alveoli cause a protein that blocks the exit. Galactoceles are benign injuries and are not a cause of cancer. It could be infected and causes what Avicenna called burning milk. This condition is currently treated with antibiotics and then surgical removal when conservative treatment fails.
2. Avicenna mentioned what is now known as Fibrocystic Disease, now known as the most common benign breast lesion, a most painful lesion that occurs between the ages of 20 and 50. Clinical examination confirms two-sided cysts of different sizes, and the diagnosis is confirmed by ultrasound, where cysts filled with liquid appear.
3. Speaking about hot breast tumors, Avicenna referred to what is now known as inflammatory breast cancer, which is currently one of the most severe types of malignant tumors affecting women due to its rapid spread, which exceeds other cancers, because of its worse external form, as well as the need for complete eradication to get rid of it.
4. Avicenna mentioned the state of sagging or drooping breast (pendulous breast), and referred to many treatments, most of which are vegetarian. It is known that the treatment of such conditions is currently breast lift operations, in which breast sagging is repaired by lifting it while maintaining its normal size.

Recommendations

At the end of this research, the following recommendations must be mentioned:

1. Medical books on breast diseases should include an introduction to explains Avicenna most important achievements, especially among the first Arab physicians in the field of breast diseases.
2. Take advantage of the medical terms used by Avicenna to denote some anatomical labels, such as the word «thandwa», which means nipple.

Conclusion

Through this research we reviewed the various breast lesions, that Avicenna spoke of in his book al-

Qanunn. Various chapters were reviewed, including all the breast lesions that were known at the time. These lesions have been interpreted according to our recent medical information. It is noteworthy that there is some convergence in Avicenna clinical description of some breast lesions with our current information, but Avicenna treatment methods for treating these conditions have largely differed from those currently in use.

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Non-Muslim Foundation Hospitals in the Republic Period and Their Contributions to Medicine of Turkey

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Summary

The non-Muslim charity foundation hospitals during the Republican Era mainly aim to serve the health needs of Greek Orthodox, Armenian Gregorian, Armenian Catholic, and Jewish societies. Nowadays, they converted their duties to private hospital care because of the decrease in the population of minorities after the 1955 İstanbul Pogrom, 1963 and 1974 Cyprus inter-community conflicts, and Asala raids against diplomatic missions of Turkey between 1970 and 1980. Although working as a private hospital but different from the classical private hospital concept that has been mainly founded as enterprises in order to gain profits; these non-Muslim charity foundation hospitals not only aimed to give health care and treatment to both Muslim and non-Muslim citizens but also taking care of disabled and elderly members of their society. This paper aims to reveal the differences between private enterprise hospitals and non-Muslim charity hospitals on behalf of public health care.

Key Words: Minority, foundation, hospital.

What is the Term Non-Muslim Foundation Hospital?

Ottoman Empire contained a lot of different religions, cultures, and ethnicities inside its emperor community. In the formations were based on a religion called Nation System; a high-level person of that specific religion ruled their people in the name of the sultan. Nation term was connecting Orthodox to Fener Orthodox Patriarchate, Armenians to Kumkapı Armenian Patriarchate, and Jews to Chief Rabbinate.[6,7]

Non-Muslim communities, which were called nations, have had the full authority to conduct their religious routines, establishing foundations, educating their own religious man and choosing delegates, creating their educational system, and applying their religious laws between them and the business.[6,7]

In the 1914 census of the Ottoman Empire, 20 percent of the population were non-Muslim. However, today it is decreased to 3.500 Rum Orthodox, 45.000 Armenian Gregorian and Armenian Catholic, and 15.000 Jew because of the 1915 Armenian Relocation, 1924 Turkish-Greek population exchange, and socio-political events that happened after them.[6,7]

Because of the decrease in population, hospitals of foundations, established before the republic to give medical care and old care services for their religious community, became almost non-functional. Since these foundations couldn't find enough medical workers from their community, they started to find medical workers outside their community to protect their wealth. Moreover, they began to give medical services, just like private hospitals, to people outside of their community who have social security. The main feature distinguishing non-Muslim foundation hospitals from private hospitals is they continue to give healthcare to people who don't have health security and old people who need health care without any concern for profit.

The History of Non-Muslim Community Foundation Hospitals in Our Country and Non-Muslim Foundation Community Hospitals That Are Still in Operation

At the end of the XIX. Century exempt Protestant Hospitals that were established in various places of Anatolia and continued to exist until the 1930s; Balıklı Rum Orthodox Hospital belongs to Rum Orthodox Community, Surp Agop Community Hospital belongs to the Catholic community, or Ahayim Hospital belongs to Jew community as the foundation hospitals within the boundaries of our country belonging to non-Muslims still

operate in order to provide health services to primarily their community and care service for the elderly community members.[6,7]

Armenian Catholic Community and Surp Agop Hospital

Armenian Catholic Community after the establishment in 1830 with the edict of II. Mahmud was officially recognized as the capital of the empire, at a meeting held in Galata in 1831, it was decided to construct a hospital and a poorhouse for the Armenian Catholic Community, besides a church. The construction of the church, poor house, and the hospital was started in 1832 with the permission letters of the Tophane Amir-i Müşiri and the Galata Kadi and with the edict of the sultan; A hospital, a nursing home and a poorhouse with 50 rooms and a capacity of 100 people, are built on the land that is now the Vosgeparan Church in Taksim.[2,6,11]

At that time, a great plague epidemic broke out in Istanbul and the hospital was insufficient. With the help of Artin Sakayan, the land where today's hospital and surrounding buildings are located was purchased in 1836. First of all, a tent hospital was established with the aim of stopping the epidemic by treating patients with cholera and plague and to stop the epidemic, and then, with the insistence of the administrative committee on a fixed hospital building, construction was started in August 1836 with the money collected from the public, and Surp Agop was built with only one year of construction. A few years ago, with the initiative of Kazazi Amira Artin, Gregorian Armenians established the Surp Pırgiç Hospital.[2,6,11]

Surp Agop Hospital was built between 1836 and 1837 by unpaid volunteer workers, and it was ensured that it was done cheaply by standing a member of the board of directors as a supervisor every week at the beginning of the construction. In the years when it was founded, the foundation hospital was earning its income from four houses, four shops and a vegetable garden. Even when Surp Agop Hospital was still a tent hospital condition, Dr. Atanas Doğramacıyan saved the son of II. Mahmud from the illness he got and then was exempted from community fees and taxes by the sultan's edict.[2,6,11]

Additional resources were needed in order to maintain free treatment for the poor patients. In 1845, with the appreciation of Sultan Abdülmecid, who was satisfied with the work in the palace broadcloth factory, to Ohannes Dadyan and giving bread and meat donations to the Surp Pırgiç Armenian Hospital as a reward, other Greek, Armenian and Jewish hospitals also started to benefit from this aid.

After the Bursa Earthquake in 1854, the victims were placed in Surp Agop Hospital and treated, and the administration constructed a Turkish bath, morgue and autopsy room at the hospital with its own means. In order to increase the income of the hospital, a school, six houses and 4 small huts were built until 1898. While Dr. While Zartarian was brought to the head of the hospital for free, a laboratory was established in the hospital under the supervision of Dr. Basan, and three operating rooms were added in 1908.[2,6,11]

The soldiers who were injured during the operation against the March 31, 1909 uprising in Istanbul were also treated in this hospital under Dr. Fincandjian and Dr. Zartarian's supervision. Due to the inadequacy of the wooden building of the hospital, which continued its duty in the Republican period, the reinforced concrete building, which was commissioned by Architect Aram Deragopian in 1968, became operational in the same place; In 2014, this building was also demolished, and a new complex was started to be built in Şişli.[2,6,11]

Armenian Gregorian Community and Surp Pirgic Hospital

While there were two hospitals in Narlikapi and Beyoglu, the Armenian Gregorian Community and Surp Pırgiç Hospital were established by a church in 1730 to serve mental and fond people; In 1832, the foundation of Surp Pırgiç Hospital decision was given at the home of Artin Bezciyan in Ortaköy. The land for this hospital was found in the Yedikule district, and the foundation certificate charter of 2nd Mahmut has been taken. The architecture of this wood hospital was designed by Garabed Balyan and Ohannes Serveryan. Surp Pırgiç Hospital was opened in 1834. However, the wood hospital was rebuilt in 1906 because of the worn. While the hospital was building, the plague epidemic started. To prevent sick people from staying with people with plague, a building called Surp Hagop, which is close to a beach built for people with the plague.[4,5,6,9]

The important event in foundation hospital revenues is that the inheritance of those who do not have children is allowed to be donated to the hospital. In the Ottoman Empire, where there was no inheritance law, this request

of the Armenian patriarch was fulfilled by II Mahmud, and the future of the hospital was guaranteed. The number of foundation properties Surp Pırgiç owned in the 1880s reached 175.[4,5,6,9]

Surp Pırgiç foundation administrations include printing among the income-generating activities for the hospital; In 1900, it was decided that the hospital would publish a yearbook called *Salname* every year.[4,5,6,9]

Zakar Tarver, who was one of the first radiologists of Turkey, was the chief physician of the hospital. He assisted Madam Curie and brought the first radiology device in Istanbul to Surp Pırgiç Hospital.[4,5,9]

The hospital pharmacy was established in 1848, and its first manager was Asadur Efendi. The pharmacy was renewed in the 1880s. In the early 1900s, when there were around 250 pharmacies in Istanbul, this institution, where two pharmacists and four students were working, prepared medicine for 200 patients a day.[4,5,9]

During the Republican Period, the hospital refurbished its service and operating rooms between the years 1950-1960. In hospital Museum, established in 2004, medical books, the oldest of which date back to 1750, Medicines and tools used in the XIX. and XX. centuries, glass and porcelain medicine jars, wooden boxes where drugs are kept, and surgical instruments are exhibited.[4,5,9]

Greek Orthodox Community and Balıklı Greek Hospital

In addition to the Gemiciler Hospital in Galata and the Plague Hospital in Beyoğlu, Balıklı Greek Hospital, previously called Yedikule Greek Hospital, was one of the three hospitals of the Greek community; Its purpose was to provide health care in plague epidemics. The three hospitals were merged under one roof later, and the management of the Balıklı Meryem Ana Church was given to the hospital during this period in order to generate income for the hospital. Afterward, the Meryem Ana Church in Eğrikapı was also attached to the hospital for the treatment of psychiatric patients residing in the church outbuildings.[6,8,10]

There was the Armenian community hospital near the Yedikule Greek Hospital. The road connecting the Yedikule Gate to the Armenian Hospital passes through the Yedikule Greek Hospital, which only deals with the plague which caused the Armenians to catch the plague. With the request of Armenians to II. Mahmud, land was allocated to The Greek community for the construction of a new hospital; it was decided that all three Greek Hospitals would be moved to this new hospital. [6,8,10]. The construction of the hospital started in 1836 and was completed in 1838; Patients in outbuildings of Galata, Taksim and Eğrikapı Meryem Ana Church were transferred to the new hospital in 1839; Physician Piniatelli and surgeon Alexandros Paspatis were assigned to the new hospital.[6,8,10]

An orphanage was built by Patrik IV. Germanos; Along with orphans, a campus was created for the elderly and psychiatric patients, and then the orphans were moved to the Büyükada Greek Orphanage in 1903. The buildings damaged by the 1894 earthquake in Istanbul were completely renovated, except for the psychiatry clinics. In 1907, three surgical clinics and operating rooms were built; moreover, x-ray, biochemistry, microbiology laboratories and pharmacy were added. In addition to the psychiatry clinics, in 1908 four small villas for patients, in 1909 a nursing home for the elderly were made, in 1912 an internal medicine clinic and an ophthalmology clinic in the same year were built.[6,8,10]

Just before the Republic, two new buildings were built, and disinfection units were installed. After the Treaty of Lausanne, with the population change of 1924, only the Greek Orthodox population remained in Istanbul, Gökçeada and Bozcaada. The hospital, which was managed by a board of trustees, was placed under the management of a single person by a bylaw issued in 1939 and faced financial difficulties; nurses provided food for themselves and patients from artisans through their personal efforts. When the board of trustees was re-established in 1949, the hospital began to return to its former days.[6,8,10]

The Greek population decreased after the 6-7 September 1955 Istanbul Pogrom, the 1963 Cyprus Tension and the 1974 Cyprus Peace Operation; In 1927 even just in Istanbul which had 650,000 people, the Greek population was 180,000 people, today it decreased to a total of 3,500 people in the country today. The departments were closed or merged with the decrease in population, the maternity department was the first to be closed, and the tuberculosis department followed it due to decreasing tuberculosis cases. The hospital was renovated in 1991; In recent years, it has been opened to the use of all citizens as a private hospital.[6,8,10]

Jewish Community and Balat Or Ahayim Jewish Hospital

Or Ahayim, which means Light of Life, is a 120-year-old foundation institution hospital. At the end of the XIX. century, after the efforts to bring medical aid to all needy patients at their houses, in 1898, it was established as a small health center at first with the edict of II Abdülhamid with the contributions of idealist Jewish doctors and benefactors of the Jewish community.[1,3,6,7]

Or Ahayim Hastanesi Musevi was built by Architect Gabriel Tedeschi with a total of 11,000 gold obtained from the donations thrown into the charity piggy banks distributed to the homes of the Jewish community, the money from the Jewish organizations abroad, and the revenues obtained from the sales of balls, plays and badges on the streets, and the construction was completed within two years.[1,3,6,7]

During the First World War, the hospital had a 30-bed service first, and then as an addition to it, a 40-bed quarantine pavilion was allocated to Hilal-i Ahmer for the care of our wounded soldiers; hospital employees were awarded the Ottoman Red Crescent Medal of Honor for their outstanding efforts; it was also a shelter for all homeless immigrants who emigrated from Rumelia and Anatolia during both the Balkan Wars and World War II.[1,3,6,7]

During the occupation of Istanbul, with the large donation of Sir Ellie Kadorie, a Jewish businessman from Baghdad, three new large buildings were built on the hospital grounds, two of which are still in use today, and the other was demolished in 2004. During the Russian Revolution and civil war, hospital also provided shelter and shelter services to White Russian immigrants from Russia in 1921.[1,3,6,7]

The hospital which provides shelter, refuge and treatment services for immigrants from Poland in 1934 before the Second World War, after the Second World War, with the establishment of the state of Israel, and the immigration of the Jewish population in Turkey to Israel, and the fall in the total population of the Jewish community across the country to around 10-15 thousand, was opened to service the entire community. with the demolition of a building built by Ellie Kadorie in the 1920s in 2004 and the construction of the Alegra Torel Geriatrics Pavilion in 2005 in its place, it still maintains its health service as a second-line private hospital contracted with the Social Security Institution with its modern service approach.[1,3,6,7]

Functions of Non-Muslim Community Foundation Hospitals Similar to Private Hospitals

Private Hospitals Law entered into force by being published in the Official Gazette dated 05.06.1933 and numbered 2419. In the first article of Law No. 2219: *"Health hostels, other than official hospitals of government and municipality hospitals with official administrations, which have been opened or will be open to cure patients and people who were sick, help weak people get their strength back and give pregnancy help, will be counted as special hospitals*" This is a definition of private hospitals that don't belong to the municipality's or government's official status.

The second article of the law is: "*private companies according to their own legislation, contractors, factories, trade, agriculture, art, people who employ too many workers on public works, labor unions and other people like this, hospitals, infirmaries and other health hostels to be opened by the organizations to treat the diseases of their workers and the people they use in their work and to protect their health are not bound by this law. Their open and close terms are bounded by their own legislation*." According to the law numbered 5238; other than private and military hospitals, before their transfer of all health organizations to the ministry of health, teacher hospitals were founded in a wide time frame; Social Insurance Institution hospitals, State Railway Hospitals, and Mail Telegraph Telephone Institution hospitals have different foundation terms compared to private hospitals. the third article of the law is: *"private hospitals can open with the permission of health and social aid power of attorney."* This article shows that it is impossible to open a private hospital without permission.

Turkey met with customization after 1980. Afterward, Turkey chose a system in which the state was only responsible for primary protection-health services. Other services which were under the responsibility of the government are transferred to private hospitals. The government will only be the controller and regulator. After 2002, the number of private hospitals increased, and it became possible to get services from private health foundations with the help of the government's social security institutions.

A need is occurred to organize these neoliberal market conditions, which is called a free market economy. That's

why on 27.03.2002, Private Hospitals Guide published at 24708 numbered Official Gazette. The first article of this Guide with purpose content is: "*aim is to organize the conditions of all private hospitals about the following subjects; determination of standards of facility, service, and employee, their classification, changes in these classes, organize them properly for the purpose, and their openings, closings, activities, and their supervision.*".With this Guide, openings, supervision, classification, and closing terms of all private hospitals are stated. The second article with scope content is: "*It covers hospitals that belong to real persons and private law legal persons, not the hospitals which belong to the state, city administrations, municipalities, universities, and other public law legal persons.*". It can be understood from this article that all hospitals, which show features of private hospitals except public hospitals, must follow this Guide. The Guide has changed many times between 2003 and 2018.

Pursuant to the first article of the Private Hospitals Law, non-Muslim community foundation hospitals operate in the status of private hospitals since they are health facilities other than state hospitals and municipal hospitals subject to provincial administration law. The second article of the same law was accepted on 06.01.2005; As it includes the establishment provisions of SSK Hospitals, PTT Hospitals, Teachers' Fund Hospitals, which were closed after the transfer of all health institutions, which came into force after Law No. 5283 dated 19.01.2015 and being published in the Official Gazette No. 25705, to the Ministry of Health, it is necessary to evaluate the studies of non-Muslim community foundation hospitals in the status of private hospitals according to the first article of the law.

The second article, which has the content of the scope of the Private Hospitals Guide, which was enacted on the basis of the Private Hospitals Rule, is: Except for State Hospitals, state administrations, which transferred to the Ministry of Health, municipality hospitals, university hospitals, and hospitals that belong to public legal persons, all hospitals, which are within the scope of real and private law, must follow the Guide. For this reason, non-Muslim Foundation community hospitals accepted to obey these rules since they use the Social Security Institution as a tool for diagnosis and treatment of patients who are out of the community.

In our country, the first regular census was carried out in 1914, and it was determined that 20% of the population at that time consisted of non-Muslims. The non-Muslim population, which decreased by 1.5% with the conflicts between societies during the First World War, the 1915 Deportation, the Occupation of Anatolia and the War of Independence between 1918-1922, the 1924 Population Exchange that took place after the 1923 Lausanne Treaty, declined to 0.3% of the population today due to the Istanbul Pogrom of September 6-7, 1955, the tense environment in Cyprus in 1963 increased by the conflicts between the Turkish and Greek communities, the 1974 Cyprus Peace Operation, the reactions of created by the attacks of the Asala Armenian Terrorist Organization in the 1970s and 1980s, which were a reflection of the tension between communities in Cyprus under British rule. While the population of 180,000 Greeks, 75,000 Armenians, 45,000 Jews and 15,000 Levantines constituted half of Istanbul in 1927; Today, 3,500 Greeks, 40,000 Armenians, 15,000 Jews and very few Levantines live in entire Turkey. The hospitals of these foundations, which were established in the pre-republican period and assumed providing health services to their own communities and care services to the elderly, have become almost dysfunctional today with the decrease in the population of the communities; For this reason, in order to protect their existence, they started to provide health services to all citizens with social security, with a structure similar to private hospitals, in addition to providing health personnel from outside their communities.

After the construction of a concrete building instead of wood in 1968 at the Surp Agop Armenian Hospital, which belongs to the Armenian Catholic Community Foundation, by achieving continuous change and development, it has reached a contemporary service concept. A safe and modern system at the level of international standards has been established in terms of surgical and anesthesia tools and equipment in two renovated operating rooms in the hospital. Urology, general surgery, gynecology and obstetrics, ear-nose-throat endoscopic surgeries can be performed in the hospital. Examinations such as x-ray examinations, ultrasonography, doppler ultrasonography, magnetic resonance, computed tomography, mammography, scintigraphy, angiography, bone densitometry measurement, panoramic chin film are carried out with modern technological devices, but also free ambulance service is offered to patients.

Today, Surp Agop Hospital has become an institution that continues its existence by providing health services to everyone without discrimination. Only the polyclinic building of the hospital's complex in Şişli Elmadağ was

left, and the other buildings were demolished in 2014; The construction of a new hospital and a nursing home for the elderly still continues. In its polyclinics, service is provided to all citizens as a secondary-level private hospital within the scope of the Social Security Institution.

Surp Pırgiç Armenian Hospital, which belongs to the Armenian Orthodox Gregorian Community Foundation, had to deal with severe economic problems since its establishment; It has tried to overcome the problems created by wars, heavy economic conditions and political environment with the income from the calendar, candle and cigarette paper trade produced within the hospital, and fundraising activities in addition to the donations of benefactors. Cigarette papers were sold in all minority hospitals at that time to generate income; As well as the Surp Pirgiç Armenian Hospital, the Armenian Catholic Surp Agop Nursing Home and its Hospital and the Balıklı Greek Hospital also took care of patients with the income obtained from cigarette paper, and the deficiencies were filled.

Surp Pırgiç Armenian Foundation Hospital's operating room was renovated in the early 1950s by philanthropists and aid organizations abroad; In 1951, a new 30-bed service was put into service, an orthopedic service was opened in 1954, the hospital had three new services in 1960, and an ultrasonography device was purchased for the hospital in 1983. The hospital polyclinic was renewed in 1986 and its services in 1987; a computerized tomography device started to serve in 1989, bone density measurement was started in 1994. The entire hospital building was renovated in 2004, and the intensive care unit was opened in 2006. Today, 450 personnel are constantly working at the hospital, and more than 750 patients are examined every day in the polyclinics of the hospital with a capacity of 118 beds; Surp Pırgiç Armenian Hospital serves everyone without discrimination under a secondary level private health institution status of the Ministry of Health.

One of the most important factors badly affecting the Balıklı Greek Hospital is the fact that the minority foundation elections, which were recognized by the Treaty of Lausanne, made in 1968 lastly, could not be held after that date, and the foundation management remained vacant due to the death or migration of the elected members. Yet, elections were held in 1991 and a new administration was formed; For the future of the hospital, it was decided to leave the hospital to its own devices and to continue serving the Greek community as far as it could go, or to reorganize the hospital with the choice of an effective working approach among the change options.

Buildings were restored within a contemporary understanding of structuring; services were reorganized, and multi-purpose Anatolia clinic, geriatrics and physical therapy services were opened. As the minority community decreased, health personnel were recruited from outside the Greek community; Today, the number of personnel has reached 440, with 39 specialists and general practitioners, 98 nurses and auxiliary personnel.

Today, Balıklı Greek Hospital functions as a secondary-level private hospital within the scope of Social Security, open to all our citizens with its polyclinics. It serves 50-55 thousand people in a year and treats 4-5 thousand patients annually in its inpatient services.

Furthermore, it continues its nursing home services for the elderly citizens of the Greek community; It provides this service with the rental income of the donated real estate and donations from the benevolent members of the society.

Or Ahayim Hospital was opened to serveof all people after the establishment of the State of Israel in 1948, with the migration of the Jewish population in Turkey to Israel over time and the decrease in the population of the Jewish community, and with its modern service approach it maintains its health service in the status of a secondary level private hospital contracted with the Social Security Institution. However, even the examination difference fee, which is legal to be taken in other private hospitals, is not collected from the patients.

In addition to health services, the hospital committee also provides social support and charity services to the volunteer groups such as the women's commission, youth branch, and pink angels, to the members of the Jewish community and to the elderly, orphans, patients and needy people who are the residents of the Balat region where its campus is located, regardless of religion or society.

Features that Distinguish Non-Muslim Community Hospitals From Private Hospitals

As long as it is not unconstitutional; all of the treaties, that approved by the Grand National Assembly of Turkey, are hierarchically above the laws. In addition to the right to property, which is a constitutional right, the provisions between articles 37-45 of the Lausanne Peace Treaty

dated 24.08.1923, which is the proof of the foundation of our country, will be accepted as the fundamental law by Turkey; Turkey accepts that no law, regulation or practice may conflict with them and prevail them. Article 40 of Lausanne Treaty stays that, *"Turkish origin members of non-Muslim minorities will be treated like other Turkish originated people and have the same assurance in front of law. Especially, they will have the right freely to speak their languages in these places and have the right to perform their religious responsibilities. Moreover, they will have the same right to establish any charity, school, or education aimed at establishments and control them"*, and Article 42 of Lausanne Treaty is *"all resources and authority will be given to the faith foundations, religion, and charity establishments of the existing influencing minorities of Turkey. Furthermore, the Government of Turkey will not refuse any guaranteed resources for establishing new religion and charity foundations.."*. With the acceptance of these articles, Turkey recognized minority foundations and asset assurance of charity establishments of minority classes.

In the republican period, after the law on the closure of mausoleums and Dervish lodges was adopted, the law of foundations no.2762 was released to organize them on 05.06.1935. This law was repealed by the publishment of no.5737 foundations law in no.26800 formal newspaper of the country. In the new law's first article, which is called purpose, is:*" The aim of this report is to determine the essentials and methods of the; management, activity, and audit of foundations, registration, maintenance, repair, and sustaining of portable and immoveable domestic and foreign foundation culture properties and to operate these properties economically.."* is stated.

The second article of this law is: *"This law covers fused, annexed and new foundations, community foundations, small business foundations and General Directorate of Foundations"* and the third article of the same law, which has a title named definitions, is: *"foundation of community refers to; non-Muslim community foundations in Turkey, which have members citizen of Turkish Republic, got the legal entity 2762 numbered law of foundations, without considering they have foundation charters.."*. n accordance with laws of 1923 Lausanne Treaty; non-Muslim community foundations came from Ottoman Empire to the Republic of Turkey have the deed of foundations recorded to the treasury in 1936 and the third article of the law is: *"1936 declaration refers to the accounting of community foundations under Law on Foundations No. 2762.."*

In line with these provisions, without thinking of non-Muslim community foundations, foundation hospitals and their charity works are beyond the authority of the ministry of health to ban, completely abolish and take ownership of the service. This makes them special compared to other private hospitals. The only sanction that the Ministry of Health can provide to these hospitals when they make a fault in giving service is cutting their money by taking them out of the treaties of the Social Security Institution.

The main purpose of the non-Muslim community hospitals in the Ottoman Empire, which were founded by foundation bonds, is giving free health services to their members, and these members were also members of minority people. This puts them into a different place on the ethical side of the view compared to other private hospitals, which have the aim of earning profit from all patients. Hospitals of non-Muslim community foundations are still working with the 2nd level private hospital position. Although they continue to make a profit with private health insurance and social health insurance, none of them request any money in any condition from members of their minority community.

When looking at the side of all citizens, who get 2nd level health service, although this is their legal right by private hospitals regulation, Or Ahayim Jew Hospital doesn't demand a fee for medical examination from any of the patients. On the other hand, Surp Agop Armenian Catholic Community Hospital in Şişli Elmadağ, again, is right to demand fees according to private hospitals regulation; they didn't take any fees from patients until the renovation of the hospital in 2004. Moreover, they provided free ambulance services for all patients. Even this makes them different from other for-profit private hospitals.

While providing money only from foundation charters, donations, and rents, non-Muslim community foundation hospitals are giving healthcare to their communities. On the other hand, no private hospital, which gives 2nd level health services in Turkey, is not giving any service of care, protection, or help to older people, people that need care, and orphans.

Surp Agop Armenian Hospital in Şişli Elmadağ, which belongs to the Armenian Catholic Community Foundation, was demolished and replaced by a new modern hospital, which has 99 beds, and a building with 44 beds for old people and forlorn people. This building still continues. According to the latest legal regulations, all polyclinics in Turkey have to work dependent on a hospital. However, to meet with medical needs of the

Armenian Catholic Community, an exception was given to a hospital of Surp Agop Armenian Catholic Community to work independently from any hospital and given the right to the ability to make revenue agreements with Social Security Institution.

Result and Discussion

Non-Muslim community foundation hospitals, whose founding purpose is clearly stated in their foundation certificate as charitable, and which undertakes to provide free health care as a social service to the members of the non-Muslim communities to which they belong, and to care for the elderly, poor, people who have no one and orphans of the community; With the decrease in the population of non-Muslim communities almost to the point of extinction as a result of social events in the last century, they have become unable to provide health personnel within their communities; Even if they have started to operate in the status of a private hospital, by opening their doors to all citizens with social security or health insurance in order to survive with the decrease in the number of community members who can get health services; They continue to provide health and care services free of charge to the needy members of their communities, who still do not have social security, and continue to function as a charitable health institution.

While health services in Turkiye are a requirement of the social state function, which are provided free of charge by the state, the establishment of private hospitals has become widespread as a result of the neoliberal policies followed in recent years and the free-market economy environment; in this way, a health system was formed in which health became a profitable commodity. Moreover, non-Muslim community hospitals, have opened their doors to all Muslim and non-Muslim citizens who have social security or health insurance in order to provide income by undertaking a function similar to a private hospital in order to continue their function of providing health services, which is their reason for existence.

In accordance with the Private Hospitals Law and Private Hospitals Regulation, non-Muslim community foundation hospitals, which, like other private hospitals, provide secondary level private health services under the supervision of the Ministry of Health, do this implementation in order to earn income in addition to foundation incomes such as grants, inheritance, charter and rent. The reason for this is the decrease in the transfer of real estate and property to non-Muslim communities through grants, donations and inheritance with the decrease in the population of each of the non-Muslim minority communities. In addition to this great loss of income, after this date the endowment incomes obtained by minority foundations through inheritance or donations, on the grounds that there was no declaration in the 1936 Foundation Certificates, are also unlawfully received.

Non-Muslim community hospitals continue to function as charitable institutions with their current property and real estate income, and to provide free shelter, subsistence, health, support and care services to the weak, poor, elderly, people who have no one, needy and orphans primarily of their own minority community; In fact, as in the case of Or Ahayim, some offer this opportunity to individuals outside the minority community in the district where the hospital is located. This feature makes non-Muslim community foundation hospitals different from other private hospitals.

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Cell Theory as A the Key Concept in the History of the Disease

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Summary

Medicine represents both an ancient profession and an enormous accumulation of knowledge and skills. Medicine always developed disease theories in the context of the paradigm prevailing at that time. In this context, for example, the humoral theory is an example that has dominated through the ages. In this article, the development of cell theory is discussed in the context of the history of medicine and disease. Therefore, first, the main pillars of the cellular approach -Schwann, Schleiden, and Virchow- are mentioned; then, the revolutionary contribution of this new theory to medical knowledge is emphasized.

Key Words: Disease theories, cell theory, Virchow, history of medicine, cellular pathology.

Introduction

Medicine can be seen as an institution, a profession, a way of thinking devoted to the explanation of the disease phenomenon. Regardless of the dimension of medicine (therapeutic or preventive medicine), the main purpose is to eliminate the disease phenomenon. This phenomenon has a quality that has always been with man since he began to live on earth and that requires him to fight and overcome. From the primitive societies to the present, the main character of this war is to know, understand and explain the other side; and then it took the form of arming the weapons against him. The level reached by human societies' efforts to understand and explain nature shows parallelism with their achievements in clarifying the phenomenon of disease. Roughly speaking, when these very intricate and centuries-old explanations that go from mystical theories to scientific theories are examined, the development of humans in the intellectual plane is also revealed.

The concept of theory of disease includes both general theories of pathology and theories of treatment; especially opinions and explanations about ethology and pathogenesis give weight to these theories. The table 1 shows various theories and approaches that can be considered theoretical to explain diseases.

This long list makes it is possible to see how the disease phenomenon is explained and the key elements that help these forms of explanation. If we go back to the concept of disease in the period that formed our subject; in this respect, one of the interesting points is that this phenomenon, which could be explained rationally and with a consistent theory in the Hippocratic period, returned to its explanation with mystical elements and irrationally during the Western Medieval Period, just as it was in the early periods of humanity. In this period, the evolution of the concept of disease remained at the stage of metaphysical explanations. Another aspect of the explanations in question is that they are "single-level". This one-levelity; it is both in the form that the disease remains "the same" regardless of the nature and symptoms of the disease, and because the pathogenesis is explained by "one and only" factor (Arda, 1997).

The main subject of this article is cell theory, which has greatly influenced the understanding of disease in the modern era. In this context, first, we will discuss the microscope's discovery and then the cell theory's development processes.

Table 1. Fundamental theories of disease in the history of medicine.

Mystical theories	Remote influence, "influence", "correspondence" (detailed by James Frazer, the theory of magic he studied)
Hippocratic paradigm (influenced by Empedocles)	Four element theory
Medieval mystic	Key words; possesion, possede, possesion diabolique, incubus-succubus, demonology, exortation technics, healing saints
Chemical medicine	Paracelsus (1493-1541)
Animal magnetismus	Mesmer (1734-1815)
Homeopathy	Hahneman (1755-1843) *(Similia similibus curantur)*
Milieue interior	C. Bernard (1813-1878)
Cellular pathology	R. Virchow (1821-1902)
Infection theory	L. Pasteur (1822- 1895), R. Koch (1843-1910)
Homeostasis	Cannon and Bard
Psychogenesis theory	Liebault (1823-1904), Charcot (1825-1893), Babinsky (1857-1932), Freud (1856-1939), post-Freudians
Wholistic theory	Meyer (1866-?)
Adaptation theory	Selye (1907-1982)
Post-Freudian psycho-sociogenesis theories	Horner, Fromm, Mead, Schilder, Hartmann, Erikson
Psycho-somatic pathogenesis theory	H. S. Sullivan
System approach	K. Menninger "Vital Balance"
Recombinant DNA studies, genetic engineering ...	

The Invention of the Microscope and New Discoveries

With the emergence of the main themes of modern biology, new instruments such as telescopes, pendulums, thermometers, barometers, and hydrometers have been adapted to scientific usage. The microscope, one of the essential tools in biology, was developed for practical use in this period and enabled the discovery of new worlds in cytology, histology and microbiology (Gardner, 1965).

The first microscopes were invented at the end of the 16th century. In the 17th century, their usage became widespread (Morange, 2021). The invention of the microscope made it possible for the previously invisible microscopic world to be observed for the first time and to have gone beyond the human sense of sight (Asimov, 1964; Mazzarello, 1999).

The discovery that all living organisms are composed of cells and cell products was made possible by the invention of the microscope, one of the greatest technological advances in the history of biology. The first simple microscopes were invented by Dutch spectacle makers in the 1590s. However, it was in 1665 that Hooke described and illustrated some pores and box-like structures in a thin piece of cork in his famous book *Micrographia* (Mayr, 2000).

The first book of micrographs was published by Francesco Stelluti (1577-1652) in 1625 (Morange, 2021). In his book, Stelluti illustrated in detail the head and mouth parts of the bees he observed with a microscope at 5 and 10 diameter magnifications (Magner, 2002; Morange, 2021).

Athanasius Kircher used the microscope to study decay and disease; showed that maggots and other creatures developed in decaying tissues (Mazzarello, 1999; Magner, 2002). In 1646, he stated that "a number of things might be discovered in the blood of fever patients". In his work *A Physico-Medical Examination of*

the Contagious Pestilence Called the Plague (Scrutinium physico-medicum contagiosae luis, quae dicitur Pestis), published in 1658, he showed these microscopic worms in his patients' blood as the cause of the great plague epidemic in Europe at that time (Hajdu, 2002a).

Jan Swammerdam (1637-1680) observed insects under a microscope and made detailed drawings of their anatomy. However, he said that blood is not a uniform red liquid as it seems but contains many tiny bodies that give it its colour (Asimov, 1964). Swammerdam was the first to describe red blood cells (Asimov, 1964; Mazzarello, 1999; Hajdu, 2002a; Morange, 2021). Swammerdam also discovered that the frog embryo consists of spherical particles (Mazzarello, 1999).

Antonie van Leeuwenhoek (1632-1723) played an essential role in developing and more effectively using the microscope. He was the first to observe single-celled organisms using hand-made microscopes and named them "animacules" (Protozoa and other single-celled organisms) (Mazzarello, 1999). Leeuwenhoek was the first to describe the sperm cells of animals, including humans and noticed for the first time that the sperm entered the egg cell during the fertilization process. He made the first accurate description of red blood cells. When maggots, fleas, and the like were commonly thought to occur by *spontaneous generation*, Leeuwenhoek showed that such creatures emerged from eggs (Gest, 2004).

Discovery of the Cell and the Cell Theory

"Micrographia: or, Some physiological descriptions of minute bodies made by magnifying glasses. With observations and inquiries thereupon" published by Robert Hooke in 1665, is considered one of the most original books of the seventeenth century, and it is also the classical book of the science (Chapman, 2005; Gest, 2005).

Micrographia was the first publication to show objects as seen under a microscope. It also includes the first accurate description and depiction of the microfungus *Mucor*, a microorganism (Gest, 2005). Hooke was more interested in the microscopic structure of visible animal and plant parts than microorganisms. In this context, he examined many examples of biological origin (calculi in urine, charcoal, petrified wood, cork, mould, moss, sponges, seaweed, leaves, spines on nettles, seeds of many plants, hair from many animals, fish scales, bee stings, feathers, as well as the external structure of many species of arthropods) and many inanimate examples (the edge of a razor, linen cloth, silk, pieces of glass, sand, ice crystals) and drew them in detail (Moore, 1993).

At only thirty times magnification, Hooke observed a pattern of small rectangular holes in a thin section of cork from the bark of an oak tree, and he saw a similar pattern in bones and plants. In these sections of the mushroom, he observed many tiny pores, which he compared to the walled chamber of a honeycomb and called these structures "cells" (*cellulae* in Latin) or "pores" (Ribatti, 2018).

Hooke's *Micrographia* is the first reference to *"little boxes or cells, distinct from one another"* (Garrison, 1929). However, cells were considered hollow structures at that time and were considered communication pathways and channels through which secretions are carried (Welch and Clegg, 2010).

Although Hooke's observation of the cell did not seem important in his own time, it became an essential resource for later research. The idea that cells are the fundamental units of life was firmly established only in the nineteenth century (Moore, 1993). Technical advances in microscopes in the late 1700s paved the way for knowledge about cells in the early 1800s (Hajdu, 2002b). In the nineteenth century, there was a significant turning point for scientists, especially microscopists, with the developments in instruments and staining techniques (Magner, 2002). In this context, more precise histological observations became possible due to the development of achromatic microscopes and appropriate specimen preparation methods in the 1830s. These technological developments have also been used in determining the fundamental properties of living organisms, and the idea that the cell is the essential component of living organisms has emerged. This idea has been developed into the comprehensive cell theory (Maximilian Buja, 2021).

In 1838, botanist Matthias Jakob Schleiden (1804-1881) suggested that plants' structural elements consist of cells or cellular products. A year later, in 1839, zoologist Theodor Schwann (1810-1882) observed with a similar approach that animal tissues, like plant tissues, are composed of cells and that each cell has a nucleus (Mazzarello, 1999; Hajdu, 2002a). These assumptions of Schleiden and Schwann formed the basis of the cell theory.

Schleiden applied the principle of epigenesis to cell formation; in 1838, he established the theory of "free cell formation". Schleiden recognized the importance of Robert Brown's work on the cell nucleus in 1833 and saw it as the key to understanding the growth and development of plants. Then, he began to see the nucleus, which he renamed the cytoblast, as a universal elementary organ in the plant world (Serafini, 1993; Magner, 2002). For him, all plants of any complexity were aggregates of cells, which he characterized as fully individualized, independent, separate entities (Magner, 2002).

Schleiden suggested that crystallization of the granular material in the cell contents and forming a nucleus was the first step in cell formation. Accordingly, as the cell nucleus grows, it forms a cell wall that separates it from the outside world, and eventually, a new cell is formed (Mayr, 2000).

Schwann published his work in the classic book *Microscopical Researches Into the Accordance in the Structure and Growth of Animals and Plants (Mikroskopische Untersuchungen über die Uebereinstimmung in der Struktur und dem Wachsthum der Thiere und Pflanzen)* in 1839 (Wolpert, 1995; Mayr, 2000). In this book, he summarized the observations of many microscopists and systematically discussed how both plant and animal tissues were formed from cells, although they looked different (Wolpert, 1995). According to Schwann, a cell consists of three essential elements: a nucleus, a fluid content, and a wall, even though no walls or membranes are actually visible (Wolpert, 1995; Wolpert, 1996).

Following Schleiden's findings, Schwann also stated that cell proliferation originates from the nucleus. His most important contribution was suggesting a general cell theory that *'that there exists a general principle of construction for all organic products, and this principle of construction is cell-formation'*, even more clearly. In addition, Schwann rejected vitality force and drew an analogy with crystallization (Wolpert, 1995).

Schwann examined numerous specimens of embryonic and adult animal tissues composed of cells and claimed cellular origin as the unifying ontogenic principle for animals as well as plants. However, he was unsure of the precise origin of the individual cells and assumed that they originated either from homogeneous living matter (possibly by forming a nucleus first) or from within other cells around their nuclei. According to Schwann, cells can thus arise inside or outside of other cells (Harris 2000; Lombard 2014). Schwann claimed that the formation of cells from a liquid via nuclei was a mechanistic crystallization-like process inspired by Schleiden (Harris 2000).

Schwann thought the new cells originate from a structure-less substance called *Cytoblastema* or *Cytoblastemia*. He hypothesized that this substance sometimes exists in pre-existing cells but is usually extracellular in animals (Ribatti, 2018).

Cell theory has become the most general structural paradigm in biology, introducing a reductionist approach that allows looking at biological problems from the ground up. The cell, the basic unit of life, has also been accepted as the essential element in pathological processes; the cause of diseases began to be seen as the result of cell changes (Mazzarello, 1999).

As a result of the work of Schleiden and Schwann, cell theory included two primary principles: 1) all living things are composed of one or more cells; 2) the cell is the basic unit of life in all living things (Parker, 2019).

The theory of free cell formation by crystallization proposed by Schleiden was rejected by Robert Remak, Rudolf Virchow and Albert Kolliker in the 1850s. However, the development of cell theory continued.

Based on Schwann's thought, Rudolf Ludwig Carl Virchow (1821-1902) expanded the cell theory; he called the cell the basic unit of life. He made assumptions about the existence of cell division to explain reproduction. He showed that muscle and bone are composed of cells, that connective tissue was mixed with nerve cells in the spinal cord and brain and developed a basic classification for cellular tissue (Ventura, 2000).

Virchow formed the idea that the effects of the disease should be visible not only with the naked eye but also under the microscope. By studying abnormal-looking white blood cells in different forms of leukaemia, for example, as an abnormally shaped nucleus or cytoplasm in the cell, such as suspicious granules, vacuoles, and other dissimilar contents, or a spiky, hairy, or crinkly cell membrane, he began to observe the differences between cells in healthy and diseased samples (Parker, 2019).

Virchow saw cellular changes as the basis of many, if not most, diseases. He stated that besides being the basic unit of life, cells are the only way for life to sustain itself (Parker, 2019). He described this new approach to pathology in an article published in 1855

and a book *(Die Cellularpathologie in ihrer Begründung auf physiologische und Pathologische Gewebelehre (Cellular Pathology: As Based Upon Physiological and Pathological Histology))* representing a compilation of his lectures published in 1858 (Buja, 2021). His book included his famous statement "*Omnis cellula e cellula*" *(All cells come from other cells)*, accepted as the third fundamental principle of cell theory. Virchow noted that even inanimate body parts such as hair and nails are made up of keratin, the tough protein produced by once-living cells (Parker, 2019).

Virchow developed a different approach to solving the debated issues in pathology and made a fundamental contribution to biological science in this process. Adopting the improved microscope for investigating diseases, Virchow concluded that pathological anatomy based on gross examination of organs at autopsy had reached its limits in providing insight into the pathogenesis of diseases (Buja, 2021).

With this approach, Virchow established the field of cellular pathology. He stated that all diseases involve changes in normal cells. That is, all pathologies are ultimately cellular pathologies. This has meant that disease entities can be identified much more precisely. By means of this, diseases can be characterized not only by clinical symptoms but also by anatomical changes. Accordingly, if the physician could find out what anatomical changes are occurring in a patient, he or she would be able to diagnose the disease much more accurately than in the past. This also empowered physicians to give more precise treatment and prognosis (Schultz, 2008).

Virchow has outlined four fundamental principles of cellular pathology: The first principle is that disease is defined as a physicochemical disorder of cells that leads to a change in function. The second principle is that all cells arise from other cells, not from formless living cytoblastema de novo. This principle is related to the third. Contrary to the view held by some morphologists, Virchow denied that any pathological process could lead to qualitatively new formations, that is, lesions beyond the characteristic forms of the species. The fourth and final principle is that cells' functional and nutritive capacities, which can ultimately be explained in physical and chemical terms, are to some extent reflected in structural change (Buja, 2021).

Virchow also drew attention to the link between human and animal diseases. He coined the term "zoonosis" to denote the infectious disease relationship between animal and human health. In addition to his ground-breaking work in cellular pathology, he established the field of comparative pathology (Schultz, 2008).

Along with the developments that took place over time, the cell theory also developed and other items were added to the accepted principles: 1) All living organisms consist of one or more cells. 2) The cell is the fundamental unit of structure and function in all living organisms. 3) Cells arise only from pre-existing cells by dividing. 4) The activity of an organism depends on the total activity of independent cells. 5) Energy flow (metabolism and biochemistry) occurs within cells. 6) Cells contain DNA which is found specifically in the chromosome and RNA found in the cell nucleus and cytoplasm. 7) All cells are basically the same in chemical composition in organisms of similar species (Wolfe, 1981; Bailey, 2021).

Discussion

As it is known, the concept of paradigm developed by Thomas Kuhn is essential for the history of science. The paradigm Kuhn proposes is, by definition, a cliché or a collection of clichés. A scientific paradigm is a set of cliché concepts, cliché definitions, cliché formulas, and cliché methods. Due to the interactions between these elements, they form a system and, ultimately, a logically coherent whole (a monolithic doctrine). The stereotypes of a scientific paradigm can infiltrate close or distant sciences, creating structural changes in them over long or short periods of time. Thus, a worldview may emerge in which the scientific paradigm, which has an effective character, is renewed and changed over time (Kuhn, 2000).

If the idea of "unity of science" is accurate, it would be possible and justified to talk about paradigms even for world designs. Specifying them, especially for the world design of the Middle Ages, is also possible. For example, is it possible to detach the four elements from the Ptolemaic universe and this universe from astrology and theology? Especially if evolution is slow, we can easily talk about the concept of "normal world design", just like "normal science".

Kuhn's concept of paradigm is intended for individual sciences. Since sciences have always been adjacent or common areas, it seems unlikely that new paradigms will not affect allied disciplines. However, when a revolution

occurs in any science and a new "normal science" is born, some of the following results can be logically considered: 1) The new paradigm contradicts the structure of allied sciences, and there is a complete break between the constellation and new normal science, which can last for centuries (sectarian sciences, esoteric sciences). That is, the positions and interactions of the element within the established system against each other are highly determinative. 2) The new normal science infiltrates allied sciences and gradually changes their structure, but there is no sharp revolution at this stage. 3) The new paradigm can make drastic exchanges with allied sciences, starting with common topics. For example, the innovations brought by radioactivity have led to revolutions in both physics and chemistry.

It has been mentioned in the scientific literature that the whole world design can also be paradigmatic. In this context, the development of cell theory represents a paradigm shift that has revolutionized both the concepts of health and disease and their perception of them.

Cell theory is an essential milestone for modern life sciences, including medicine. Understanding the cell is a prerequisite for the concepts of body structure, heredity mechanism, fertilization, development and differentiation, the unity of life from simple to complex organisms, and the theory of evolution. To say that the cell is the basic unit of life is to provide an extremely powerful generalization that integrates the studies of structure and function, reproduction and heredity, growth and differentiation.

Although the theories of Schleiden and Schwann continued the idea of spontaneous generation, in which living cells or organisms are regenerated from non-living components, Virchow's theory of cellular pathology led to a significant change. In the eighteenth century, the understanding of humoral pathology began to be abandoned; cell theory, which replaced it, offered a reductionist approach to biological problems. Thus, it has become the most general structural paradigm in medicine and other life sciences.

In addition to being the basic unit of life, the cell has also been seen as the essential element of pathological processes. Diseases (regardless of the causative agent) have begun to be regarded as a change of cells in the organism. Virchow's theory of cellular pathology has been accepted as one of the most important theories until the theory of molecular pathology.

Conclusion

The microscope's invention and the technique's improvement over time brought along a new era. Although the earliest microscopes provided only tenfold magnification, even that was enough to reveal the existence of organisms and structures invisible to the naked eye. The cell, first described by Hooke in 1665, and the idea that all plants and animals are composed of cells, put forward by Schleiden and Schwann, undoubtedly constituted a critical turning point in the history of biology and medicine. Twenty years later, Virchow's view that all cells come from other cells changed the spontaneous generation paradigm that prevailed in the Middle Ages and started a new era.

The cell theory, which developed further after discovering intracellular organelles and the mechanism of mitosis, also laid the foundations of modern biology. After the nineteenth century, studies on the cell increased with the development of both science and technology.

The invention of the electron microscope in the early twentieth century made it possible to image even very small molecules in detail. Subsequently, the discovery of the structure of cell DNA constituted another essential milestone for studies at the cellular level.

Most research done today is now done at the molecular level. DNA, and therefore the cell, is used to investigate diseases' origins, treatment, and protective measures against diseases. In this context, the development of a cell-based theory of pathology and the disappearance of centuries-old humoral pathology; also means heralding a paradigm shift that opens the door to the intracellular/subcellular world.

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Coherence Review of Essential Fundamentals of Unani, Ayurveda, Siddha and Homeopathy Systems of Medicine Contemplating Basic Rudiments

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Summary

Medicine is the science and practice of the diagnosis, treatment and prevention of disease. The word medicine is derived from Latin *medicus*, meaning "physician". According to Henry Siegerist, the medical historian has stated that every culture had developed a system of medicine and medical history is but one aspect of history of culture. India, with its rich cultural heritage, has been in the forefront in contributing to the medical sciences, and there is plenty of proof of the same. *Ayurveda*, *Yoga* and Naturopathy, *Unani*, *Siddha,* and Homeopathy ***(AYUSH)*** is one component of the six indigenous systems of medicine practiced in India. The art of tending to the sick is as old as the humanity itself. The ancient civilizations probably knew about the functions, physiology and anatomy of the human body in surprising details, and their art of tending the sick remains a proof of their knowledge.

The medical systems that are truly Indian in origin and development are ***Ayurveda*** and the ***Siddha*** systems. ***Unani-Tibb*** and Homeopathy, though not of Indian origin, have a significant importance in health care in India. Today, India is one of the leading countries as far as the practice of *Unani* medicine is concerned.This paper will be an attempt in analysing the insights of various fundamental principles and key concepts of *Unani*, *Ayurveda*, *Siddha* and Homeopathy along with their differential aspects.

Key Words: Unani-Tibb, Ayurveda, Siddha, Unani medicine, Homeopathy, AYUSH.

Introduction

Medicine is that the science and practice of the diagnosis, treatment and prevention of disease. The word medicine springs from Latin *medicus*, meaning "physician". Medicine has existed for thousands of years, during most of which it had been an art, frequently having connections to the religious and philosophical beliefs of local culture. Medicine was linked with-Religion, Philosophy, Education, sort of Govt., Economic conditions of the people, Science, Aspirations of the people, etc.[1]

According to historian, Ibne Abi Usaibia, medicine has been derived from four methods: religious leaders, fortunate happenings, clues from animals and true dreams.[2] Medical knowledge in fact has been derived to a very great degree from the intuitive and observational propositions and cumulative experiences gleaned from others.[2]

According to Henry Siegerist, the medical historian has stated that every culture had developed a system of medicine and medical history is but one aspect of history of culture. According to Dubos, the ancient medicine is the mother of sciences. It played a large role in the integration of early cultures.[1] Along with the Greeks, the Chinese, the Babylonians and Egyptians were practicing medical traditions since time immoral.[3]

Ayurveda, Yoga and Naturopathy, Unani, Siddha, and Homeopathy **(AYUSH)** is one component of the six indigenous systems of medicine practiced in India. These systems are incorporated into mainstream health system

in the country with the commencement of National Rural Health Mission **(NRHM)**. This innovative concept is termed as "mainstreaming of AYUSH and revitalization of local health traditions". [4] The medical system that are truly Indian in origin and development are the Ayurveda and the Siddha systems.[1]

Historical Back Ground of Unani Medicine

The Unani System of medicine owes, as its name suggests, its origin to Greece. It was the Greek Philosopher-physician **Hippocrates** (460-377 BC) who freed Medicine from the realm of superstition and magic, and gave it the status of Science, The Hippocratic Oath- which is still taken (though significantly modified) by doctors up to today- was compiled in Greece in the 5th century BC for which he is justly called the Father of medicine.[5]

The origins of Unani medicine are found in the doctrines of the ancient Greek physicians Hippocrates and **Galen** (131-210AD) on which Arab & Persian physicians like **Rhazes** (850-925AD) constructed an impressive edifice. As a field, it was later developed and refined through systematic experiment by the Arabs, most importantly by Muslim scholar-physician **Avicenna**. During the Caliphate (the political-religious Muslim state that began in 632 CE), the bulk of Greek knowledge was translated into Arabic, part of that knowledge being the principles of medicine. This system, earlier known as **"*Galenics*",** later became known as ***Unani Tibb*,** (*Unani* being the Arabic word for "Greek" and *Tibb* an Arabic word for "medicine"). With additional contributions of medical wisdom from other parts of the Middle East and South Asia, Unani medicine came to be known also as Arabian, or Islamic medicine.[5]

In India, Unani System of Medicine was familiarized by Arabs and soon it took firm roots. The Delhi Sultans (rulers) provided support to the scholars of Unani System and even enrolled some as state employees and court physicians. During the British rule, Unani System suffered an impediment due to withdrawal of State Patronage, but continued to be practiced as the masses reposed faith in the system.

An outstanding physician and scholar of Unani Medicine, **Hakim Ajmal Khan** (1868-1927) advocated the cause system in India. After Independence of India, Unani System was recognized as one of the Indian Systems of medicine and steps were taken to develop and propagate this system.

Fundamentals of Unani System of Medicine

The Practitioners of Unani medicine, or *hakims*, relies on natural healing based on principles of harmony and balance, uniting the physical, mental, and spiritual realms. According to the principles and philosophy of Unani Medicine, disease is natural process. Its symptoms are the reactions of the body to the disease and the chief function of the physician is to aid the natural forces of the body.

Al-Umoor al-tabiyah: Basic Physiological Principles

According to practitioners of Unani medicine, the health of the human body is maintained by the harmonious arrangement of *al-umoor al-tabiyah*, the seven basic physiological principles of the Unani doctrine. These principles include

1. ***Arkan***, or elements,
2. ***Mizaj*,** or temperament,
3. ***Akhlat*,** or bodily humours,
4. ***Aaza***, or organs and systems,
5. ***Arwah***, or vital spirit,
6. ***Quwa***, or faculties or powers, and
7. ***Afa'al***, or functions.

Interacting with each other, these seven natural components maintain the balance in the natural constitution of the human body. Each individual's constitution has a self-regulating capacity or power, called ***tabiyat*** (or ***mudabbira-e-badan*; *vis medicatrix naturae*** in Latin), or to keep the seven components in equilibrium.

Arkan and Mizaj(elements and temperament): The human body contains four elements. Each of the four elements has its own temperament as follows:

Elements- : Temperament-
Air (*Hawa)* : Hot and Moist
Earth (*Arz)* : Cold and Dry
Fire (*Nar)* : Hot and Dry
Water *(Ma'a)*: Cold and Moist

As four simple, indivisible entities—*arz* (earth), *ma'a* (water), *nar* (fire), and *hawa* (air)—*arkan* not only constitute the primary components of the human body but also make up all other creations in the universe. There are predictable consequences to the

actions and interactions (*imtizaj)* of the four *arkan.* As these elements act upon and react with each other, they continually undergo change into various states of "genesis and lysis" (generation and deterioration), due to *ulfat-e-keemiyah* (acceptance of a medicine by the body) and *nafarat-e-keemiyah* (rejection of a medicine). Skilled hakims claim that they can perceive, recognize, and observe such states.

The equilibrium of the individual's elemental combination and resulting *mizaj*, as determined by *tabiyat*, provides a stable constitution to that individual-in other words, health. Just as elemental balance keeps an individual in a healthy state, changes in natural temperament cause the health of an individual to suffer. Therefore, ***mizaj*** (temperament) plays a pivotal role in Unani in characterizing a person's normal state (physical, mental, and social), as well as the nature of a disease.

Unani Medicine is based on the **Humoral Theory *(Nazariya-e-Akhlat*),** which is the essence of the practice of Unani medicine, presupposes the presence of four humours in the body.

Dam (Blood)
Balgham (Phlegm)
Safra (Yellow Bile)
Sauda (Black Bile)

Each humour has its own temperament:
Blood - hot and moist
Yellow bile - hot and dry.
Phlegm - cold and moist
Black bile – cold and dry

The temperaments of persons are expressed by the words ***damwi (*sanguine), *balghami* (phlegmatic), (*safrawi)* choleric and (*saudawi)* melancholic** according to the preponderance in them of blood, phlegm, yellow bile, and black bile respectively.

Concept of Health & Disease

According to Unani, if the four main humours and the four primary temperaments (hot, cold, dry, moist) are all in a state of mutual equilibrium, the person is considered healthy. Every person has a unique humeral constitution which represents this healthy state. To maintain the correct humeral balance there is a power of self-adjustment called Immunity **(*Quwwat-e-Mudabbira-e-Badan*)** in the body. If this power weakens, imbalance is bound to occur resulting disease.

Methods of Diagnosis

The Diagnostic process in Unani system depends on observation and physical examination.[6] Emphasis is on diagnosing a disease through pulse (*Nabz)*, a rhythmic expansion of arteries, which is felt by fingers. Other methods of diagnosis include examination of urine *(Baul),* stool *(Baraz)*.[7]

Concept of Prevention of Disease

Unani system of Medicine recognizes the influence of surroundings and ecological conditions on the state of health of human beings. This system at restoring the equilibrium of various elements and faculties of the human body. It has laid down six essential pre-requisites for the prevention of diseases and places great emphasis, on the one hand, on the maintenance of proper ecological balance and, on the other, on keeping water, food and air free from pollution.

Unani medicine recognizes six physical, or external, factors, called ***asbab-e-sittah-zarooriah***, which are essential in establishing a synchronized biological rhythm and thus living a balanced existence. These six essentials, known as **Asbab-e-Sitta Zarooriya**, are:

- ***Hawa* (air),** in which the quality of the air a person breathes is thought to have a direct effect on his or her temperament and, thus, health.
- ***Makool-wo-mashroob* (food and drink),** in which the nutritional value and the quality and quantity of one's food and drink are believed to ensure physical fitness by strengthening *tabiyat.*
- ***Harkat-wo-sakoon-e-jismiah* (bodily exercise and repose),** which emphasizes the positive effects of balanced physical exercise on an individual's internal resistance and *tabiyat.*
- ***Harkat-o-sakoon nafsaniah* (mental work and rest),** which emphasizes the simultaneous engagement of the human mind in numerous emotional and intellectual activities. Just as the body needs systematic and planned exercise and rest, Unani medicine holds that the human mind and brain need adequate stimulation and proper relaxation as well.
- ***Naum-o-yaqzah* (sleep and wakefulness),** in which an individual's health and alertness are understood as being dependent on a specific amount of sound sleep in the course of a 24-hour (circadian) cycle.
- ***Ihtebas and istifragh* (retention and excretion),** which considers the metabolism of food and liquid as both affecting and being regulated by *tabiyat*.

According to Unani medicine, the assimilation of food and liquid facilitates the elimination of excessive and noxious substances from the *body. Therefore, to maintain a harmonic and synchronized tabiyat, certain* beneficial end-products of *kaun-o-fasad* (genesis and lysis) are retained in the body while harmful ones are expelled.

These six factors are believed by Unani practitioners to directly affect the harmony of the human mind and body. Socioeconomic, geographic, and environmental factors are considered secondary factors **(*asbab-e-ghair-zarooriah*)** in the Unani system and therefore indirectly influence *tabiyat*. However, both the primary and the secondary factors must be closely considered in the Unani process of treatment.

Relationship Between Tabiyat and Asbab-e-Sittah-Zarooriah

In the Unani system of medicine, *tabiyat* is an individual's internal power or capacity to withstand or combat disease and to perform normal physiological functions. Believing that it is only *tabiyat* that is engaged in actually curing a disease, Unani hakims hold that they only assist from "outside" by prescribing therapeutic relief. If not adversely affected, *tabiyat* can eradicate most infections without medical treatment, using what may be thought of as the natural defense system of the mind and body.

Modes of Treatment

The initial approach to treatment in the Unani system entails the establishment of a regimen to normalize and balance the external factors (e.g., air, water, and food) involved in ailments and diseases. If this proves inadequate, then other means, such as treatment with natural medicines, may be recommended. Any Unani treatment prescribed by a hakim acts as an outside agent to help boost the patient's tabiyat and thus restore good health and a sense of well-being.

In Unani system of Medicine, various types of treatment are employed such as:

- **Regimental therapy *(Ilaj-bit-Tadbeer*),**
- **Diet therapy (*Ilaj-bil-Ghiza),***
- **Pharmacotherapy *(Ilaj-bid-Dawa)***
- **Surgery *(Ilaj-bil-yad or Jarahat).***

Classical Unani medicine recommended established "regimental" therapies *(tadabeer)* in the treatment of various chronic and acute diseases. The essential function of all those regimens is to remove impure blood or impurities from the body.[8]

Some of the commonly used Regimental therapies are as follow:

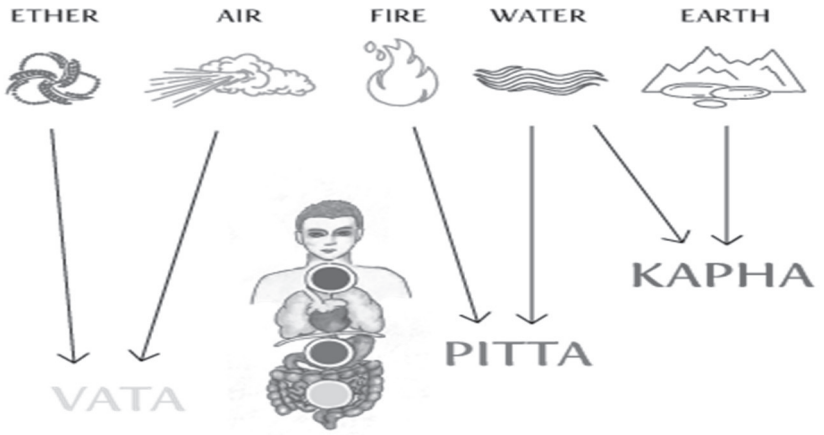
- ***Hammam*** - Turkish bath & various types of medicated baths.
- ***Dalak*** - Massage and physiotherapy.
- ***Riyazat*** - Physical exercise.
- ***Takmeed*** - Fomentation.
- ***Hijamah*** – Cupping, a process of drawing blood to the surface of the body by using a glass cup or tube),
- ***Fasd*** - Venesection. or opening a vein to let out blood),
- ***Ishaal*** - Purgation.
- ***Qai*** - Emesis.
- ***Idrar-e-Baul*** - Diuresis.
- ***Amal-e-Kai*** - Cauterization.
- ***Taleeq/ Irsale Alaq*** - Leeching. or bleeding a person by using leeches
- ***Tareeq*** - Diaphoresis
- ***Huqna*** –Enema

The **Diet-o-therapy** aims at treating certain ailments by administration of specific diets or by regulating the quantity and quality of food. **Pharmacotherapy** deals with the use of naturally occurring drugs, mostly herbal, though drugs of animal and mineral origin are also used.

Surgery *(Jarahat)* has also been in use in this system for quite long. In fact, the ancient physicians of Unani medicine were pioneers in this field and had developed their own instruments and techniques. Surgical interventions, or ***ilaj-bil-yad***, are a last resort. Relatively infrequent in modern Unani therapy is ilaj-bil-misl, or organotherapy, a mode of treatment that involves healing a diseased organ with the use of tissue extracts from the same organ of a healthy animal. Ilaj-bil-dawa, or pharmacotherapy, is the use of medicines by Unani hakims.

Ayurveda: Basic Principles

First documentation of Ayurveda is found in the *Vedas*, the world's oldest existing literature and one of the first Indian text dealing with medicine is Atharvaveda.[9,10] At the end of the Vedic period the progressive establishment of scientific *Ayurveda* began. *Charakasamhita*, *Susruta samhita* and *Astangahrdaya* are the most important and popular among these *samhitas*, those were compiled



approximately between 1500 BC to 500AD. In these texts all eight clinical branches of Ayurveda are described together with their fundamental principles. '*Ayurveda'* is generally understood as 'Science of life' translating '*Ayuh* (r)'as life and '*Veda*' as science.[11] *Charaka*, in his compendium *Charaka samhita*, highlighted that life may be prolonged by human effort.[12] *Sushruta Samhita* (commonly dated 6th Century BC) on the other hand, involves more on the therapy.[13,10]

All material forms including body is composed of ***Panchamahabhutas*** (five subtle elements) namely *Prithivi* (earth), *Jala* (water), *Agni* (fire), *Vayu* (air) and *Akasha* (ether/space).[10, 11]

Basic Principles: Every human being is born with a unique proportion of biologic principles *(doshas) – vata, pitta, kapha* (wind, bile and phlegm respectively), representing the individual Genetic code which takes part in forming of our mental and physical characteristics.

During the course of life, the *dosha* proportions deviate (*vikriti*) from its original state (*prakriti*) for various reasons and subsequently, it has an impact on our mental and physical health condition.[17]

Doshas

These three principles namely *Vata, Pitta* and *Kapha* are most important phenomena in Ayurveda, as these produce good and ill effects on the entire system depending on their normal or abnormal state.[9] ***Vata:*** This is dynamic principle, responsible for all the movements in body.[9]

Pitta: This is a thermal principle. The word *Pitta* gets its origin from *Sanskrit* root '*Tapa'* denoting, 'heat'. *Pitta* is responsible for digestion, catabolism, energy, heat, vision, valour, anger, hunger, thirst and intelligence.[9]

Kapha: This is a hydroic and uniting principle originated from Sanskrit root '*Ka* 'denoting 'water'. It is responsible for anabolism, strength, potency, stability, lubrication, nourishment, tolerance and contentment.[9]

Concept of Health and Disease

Health is an optimal state of harmonious body functioning. It represents the balance between three biological principles (vata, pitta, kapha) according to the original condition (vikriti), bodily tissues and their functions, sensory organs, the mind and psychic consciousness.[14]

Ayurvedic expression for healthy state is **'*Swasthya*'**, a *Sanskrit* word composed of two basic words viz. '*Swa'* and '*Stha*' denoting 'self' and 'to remain or to stay' respectively. Thus *'Swasthya'* denotes one that stays within self. Life is manifestation of interdependent union of soul (the self); mind and body.

Another expression for health is ***Prakriti*****,** denoting a natural state. Until one remains in his natural state, he is healthy, and he enjoys this until he falls in *Vikriti* i.e. diseased state as a result of contact with any *Hetu* (etiological factor).[9]

The Cause of Disease

The **cause of disease in Ayurveda** is viewed as a lack of proper cellular function due to an excess or deficiency of *vata, pitta or kapha*. **Disease** can also be **caused** by the presence of toxins. In **Ayurveda**, body, mind and consciousness work together in maintaining balance.[15, 10]

	AYURVEDA	**UNANI**
BASIC CONCEPTS	*Panchamahabhoota* -body is composed of *Panchamahabhutas* (five subtle elements) namely *Prithivi* (earth), *Jala* (water), *Agni* (fire), *Vayu* (air) and *Akasha* (ether/space).	*Nazariya Mawalid e Salasa (*Tri-matter Theory)
	Tri-Dhatu OR *Tri-Dosha*	*Nazariya e Akhlat (*Humoral Theory)
	Shareer (Anatomy+ Physiology) i. *Rasa* **(chyme)** ii. *Rakta* **(blood)** iii. *Harha* **(haddi)** iv. *Mansa* **(flesh)** v. *Maed* **(fat)** vi. *Manja* **(bone marrow)** vii. *Dhata* **(semen)**	*Nazariya e Tabiyat (Physic)*
		Umoor E Tabiya *(Natural Factors)* 1. *arkan, or elements,* 2. *mizaj, or temperament,* 3. *akhlat, or bodily humours,* 4. *aaza, or organs and systems,* 5. *arwah, or vital spirit,* 6. *quwa, or faculties or powers, and* 7. *afaal, or functions.*
	Measures to maintain and promote health: • *Dinacharya* (Daily routines) • *Ritucharya* (Seasonal regimen) • *Rasayana* (Anti-aging measures) • *Vajikarana*(Measures to improve quality of reproductive functions)	***Asbab E Sitta Zarooriyah*** *(Six Essential Causes)* • *Hawa (air),* • *Makool-wo-mashroob (food and drink)* • *Harkat-wo-sakoon-e-jismiah (bodily exercise and repose),* • *Harkat-o-sakoon nafsaniah (mental work and rest),* • *Naum-o-yaqzah (sleep and wakefulness),* • *Ihtebas and istifragh (retention and excretion),*
DIAGNOSTIC METHODS	***Ashth Sthana Pariksha****:* • *Narhi* (Pulse) • *Sparsh* (Touch) • *Roop* (Look) • *Shabd* (Query) • *Uresha* (Stool) • *Mutra* (Urine) • *Netra* (Eye) • *Jeebh* (Tongue)	• *Imtehan bil Nazar* (Inspection) • *Imtehan bil Lams* (Palpation) • *Nabz* (Pulse) • *Bol* (Urine) • *Baraz* (Stool)
LAWS OF TREATMENT *(USOOL E ILAJ)*		*Kaifiyat e Arba* (four physical properties)
CONCEPT OF HEALTH AND DISEASE	• *Swasthya* • *Prakriti* (Natural state) • *Vikriti* (Diseased state) ***Trisutra Ayurveda*** • ***Hetu*** (Etiology or Etiological factors) • ***Linga*** (Symptomatology) and • ***Aushadha*** (knowledge of therapeutics)	
MODES OF TREATMENT *(TAREEQA E ILAJ)*	• ***Panchakarma*** (Five Regimens) • ***Aushadhi Chikitsa*** (Pharmacotherapy) • ***Shalya Chikitsa*** (Surgery)	• ***Ilaj bil Tadbir*** (Regimenal Therapy) • ***Ilaj bil Ghiza*** (Dietotherapy) • ***Ilaj bil Dawa*** (Pharmacotherapy) • ***Ilaj bil Jarahat*** (Surgery)
SOURCES	***4 Vedas****:* • *Rigveda,* • *Yajur-Veda,* • *Sama Veda,* *v Atharva Veda* ***2 Samhitas:*** • *Charaka Samhita,* • *Sushruta Samhita*	• *Alqanoon fit Tibb (The Canon of Medicine)* • *Zakhira Khwarzam Shahi* • *Al Hawi fit Tibb* • *Moalejat E Buqratiyah*
MEDICAL ETHICS	Code of *Manu*	Hippocratic Oath

Trisutra Ayurveda

Ayurveda has two main medical objectives-

1. Prevention and health –promotion of healthy individuals.
2. Treatment of diseased ones.

To attain these objectives, a practitioner of Ayurveda has to learn Ayurveda consisting of three main divisions of descriptions (*Trisutram*) viz.

Hetu (Etiology or Etiological factors)
Linga (Symptomatology) and
Aushadha (knowledge of therapeutics)

Ayurveda emphasizes first upon prevention and then early treatment of the diseases.[12]

Measures to Maintain and Promote Health

These measures include:

1. *Dinacharya* (Daily routines)
2. *Ritucharya* (Seasonal regimen)
3. *Rasayana* (Anti-aging measures)
4. *Vajikarana* (Measures to improve quality of reproductive functions)

Dinacharya and *Ritucharya* are emphasized here because of their practical importance.

Dinacharya:

Dinacharya means to live in a regular and natural rhythm of life and includes timely rest, timely activities and within the capacity work, timely sleep, timely waking, timely and right food, non-suppression of natural urges and well balanced emotional behaviour.

Ritucharya:

Ritucharya includes measures (food, activities, routines and livings) according to the qualities of the seasons to protect us from their ill effects of seasonal variations.[12]

Measures to Treat a Disease*:*

Ayurveda considers not only the body, but the mind, and also some other subtler aspects. Basically this consists of three types of approaches-

1. ***Devavyapashraya Chikitsa -*** This includes *Mantras*, prayers and certain rituals to intensify spiritual feelings and thinking.
2. ***Sattvavajaya:*** *Sattvavajaya* is defined as restraining the mind from harmful objects i.e. negative thinking, negative beliefs, negative memories and wrong decisions. This is achieved through meditation, and *Yogic* thinking.
3. ***Yuktivyapashraya Chikitsa***: This includes mainly three approaches-
   - **(i)** ***Nidana Parivarjanam*** (Avoidance of the causes): Several diseases can be treated by avoiding the activities and the food which are in favour of the disease process.
   - **(ii)** ***Samsodhana:*** Meaning of this word is to remove some harmful thing from the body. Thus it includes removal of *Doshas* by certain therapeutic techniques and surgical removal of some harmful object from the body.

     Ayurveda has developed certain techniques to mobilize the *Doshas* and other harmful factors. *Snehana* (oleation) and *Swedana* (fomentation) to bring them in alimentary canal and then to expel them out from whole body by five cleaning procedures known as ***Panchakarma*****,** which include:
     - ***Vamana*** (therapeutic emesis),
     - ***Virechana*** (purgation),
     - ***Niruha*** (enema with plant decoctions) and
     - ***Anuvasana*** (medicated oily enema).
     - ***Nasya*** (nasal treatments) are special measures suggested to clean cranial structures being most complicated.
   - ***(iii)*** ***Samsamana:*** These are palliative therapies. These include *Ahara* (wholesome food), *Vihara* (wholesome activities) and *Aushadha* (medicaments).[12]

BASIC FUNDAMENTALS OF SIDDHA MEDICINE

The Siddha system of medicine mainly practised in the Southern part of India and Sri Lanka, is one of the earliest traditional medicine systems in the world and deals with physical, psychological, social and spiritual well-being of an individual. The roots of this system are intertwined with the culture of ancient Tamil civilization.[16, 17]

This principles and doctrines of this system, both fundamental and applied, have a close similarity to Ayurveda. Resembling Ayurveda, this system believes that all objects in the universe including human body are composed of five basic elements namely, earth, water, fire, air and sky. As in Ayurveda, This system

	AYURVEDA	SIDDHA
ORIGIN	Ancient India	Tamil speaking states of South India only
BASIC CONCEPTS	*Tri-Dosha Theory:* • *kapha* is dominant in childhood, • *vatha* in old age and • *pitta* in adults.	predominance of • *vatha* in childhood, • *pitta in* adulthood and • *kapha* in old age.
	Ayurvedic contexts are written in Sanskrit	*Siddha* is written in Tamil

also considers the human body as a build-up of three humours, seven basic tissues and the waste products of the body such as faeces, urine and sweat. The food is considered to be basic building material of human body which gets processed into humours, body tissues and waste products. The equilibrium of humours is considered as health and its disturbance or imbalance leads to disease or sickness.[18]

In the Siddha system of medicine, man is viewed as a microcosm and the universe as a macrocosm. The whole universe, including human body, is believed to be constituted of **five primordial elements or *Panchabhootham* viz. Earth, Water, Fire, Air and Space**. The ***Pancheekaranam* theory (Five Fold Combination) of Siddha** science explains the origin and formation of these basic elements as well as the role of these five elements in the formation of every substance both in the universe and in humans. These elements always act in mutual co-ordination and can never act independently. [19]

Uyir Thathukkal (Three Humours)

Uyir thathukkal literally means 'life force'. **In Siddha, *Vaatham, Pitham* and *Kabham*** which are the three humours, are responsible for the creation, preservation and destruction of human body and health. When they are in the state of equilibrium our body remains in a healthy state while any disturbance in this ratio leads to diseased state or death.[19]

Udal Thathukkal (Physical constituents)

The human body is constituted of seven tissues as its physical constituents, which are known as the *Udal Thathukkal*.[19]

BASIC FUNDAMENTAL DIFFERENCE BETWEEN AYURVEDA AND SIDDHA

- Both are contemporary Medical Sciences.
- Ayurveda is **not** the translation of *Siddha.*
- The *Dosha* itself is having opposite prominence according to age.
- *Siddha* deals more with Metallic as well as Cauterized drugs, Ayurveda deals more with raw as well as liquid medicaments.
- *Siddha* emerged from *Shiva*, *Ayurveda* from *Vishnu* (From his incarnation *Dhanwanthari)*.
- Ayurvedic contexts are written in *Sanskrit* whereas *Siddha* is written in Tamil.[20]

The basic concepts of Siddha medicine are almost similar to Ayurveda. The only difference appears to be that the Siddha medicine recognizes predominance of *vatha*, *pitta* and *kapha* in childhood, adulthood and old age respectively, whereas in Ayurveda it is totally reversed: *kapha* is dominant in childhood, *vatha* in old age and pitta in adults.[21]

Thus, Siddha system of medicine emphasizes that medical treatment is oriented not merely to disease, but also has to take into account the patient, environment, age, habits, and physical conditions.[21]

BASIC PRINCIPLES OF HOMEOPATHY

Homeopathy, propounded by Samuel Hahneman of Germany gained position in India during 1810 and 1839 AD.[22] Homeopathy is practised in several countries, but India claims to have the largest number of practitioners of this system in the world.[22] A rough study states that about 10% of the Indian population solely depend on Homoeopathy for their Health care needs and is considered as the Second most popular system of medicine in the

Country.[23] Its strength lies in its evident effectiveness as it takes a holistic approach towards the sick individual through promotion of inner balance at mental, emotional, spiritual and physical levels. [23]

The word 'Homoeopathy' is derived from two Greek words, ***Homois*** **meaning similar and** ***pathos*** **meaning suffering.** Homoeopathy simply means treating diseases with remedies, prescribed in minute doses, which are capable of producing symptoms similar to the disease when taken by healthy people. It is based on the natural law of healing- **"*Similia Similibus Curantur"*** which means **"likes are cured by likes".**[23]

It is a system of pharmacodynamics based on "treatment of disease by the use of small amounts of a drug that, in healthy persons, produces symptoms similar to those of the disease being treated" [24] Hahnemann believed the underlying causes of disease were phenomena that he termed miasms, and that homeopathic preparations addressed these. The preparations are manufactured using a process of homeopathic dilution, in which a chosen substance is repeatedly diluted in alcohol or distilled water, each time with the containing vessel being struck against an elastic material, commonly a leather-bound book.[25]

Homeopaths select homeopathics by consulting reference books known as repertories, and by considering the totality of the patient's symptoms, personal traits, physical and psychological state, and life history.[26]

CONCLUSION

Many of the alternative therapies described and discussed above have already received extensive and positive clinical evaluations. Being rich in literature both Unani & Ayurveda systems of Medicine have better approach for the management and treatment of Non Communicable Diseases (NCDs) as compared to Homeopathy and Siddha. The critical mass of researchers, clinicians, and policymakers has formed to give them more exposure and recognition. Therefore, many of these therapies should be included in any serious discussions about developing a truly comprehensive health care system. However, they still may represent with the rising confusion among these medications, it becomes important to know the difference between them, though priority should be given to the best suitable treatment to one's body. As from above discussion it is clear that all types of medications whether Unani or Ayurveda, Homeopathy or Siddha can be taken into consideration accordingly if one wants to cure the disease permanently. Above all, if one takes proper care of diet, attitude, changing lifestyle, exercises there would be more positive impact of these therapies. Hence, it can be concluded that the traditional systems have some similarities they are: (i) Holistic, non-atomistic ontological, epistemological, and practice orientation, (ii) aim at preventive as well as curative health promotion, (iii) Individualized treatment based on a system approach. Apart from similarities, they are having some differences also like (i) Use of different languages including different concepts of levels of wholeness, (ii) different diagnostic systems (iii) Different specific therapy modalities.

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The Concept of Biological Environment Between Hippocrates and Galen

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Summary

Introduction: The biological environment (Modern Medical Geography) is one of the subjects that have always preoccupied the scientists of ancient civilizations. Where they thoroughly studied and described and the diseases related to it, in addition to the physical and psychological related to it. Hippocrates (337-460 BC) pioneered the physician-scientists who dug deep into the subject in his book "On Airs, Waters and Places", and was followed later by Galen's chart on "Explaining Hippocrates On Airs, Waters and Places" which showed his views on the subject.

Objectives: To shed a light on how to discuss the biological environment from the view of Hippocrates and Galen, and see if there was a development or difference in the concept between the two.

Methods: We will depend on the historical retrospective approach and enlist few tables that simplify and explain the concept of biological environment as Hippocrates approached it, then we will provide how Galen did. Finally, we will make a comparison between the two.

Results: Biological environment is a neo-old science that Hippocrates deeply explained and anchored the first principles which showed his good foresight and high analogy abilities. He resembled people habits and features to their terrains, and explained the diseases they caught with the surrounding environment. Galen had the same advantage where he foresaw the causes, deciphered the enigmas and explained the mysteries.

Conclusion: The biological environment was the center of interest for scientists since the ancient times even though it was not clearly titled. We can consider Hippocrates as the first to who took attention and discussed it with the simplest possible approach, then Galen followed him. Their books and views were the beacon that led later to establishing a new crucial science that contributes to our current days most important researches and studies in medical, geographical and biological fields.

Key Words: Biological environment, medical geography, climate elements, On Airs, Waters and Places, Hippocrates, Galen.

Introduction

The biological environment (or the modern Medical Geography) is specialized in studying the relation between diseases and environmental elements whether natural or human. Evaluating their negative effects on the human lives and their living and economic conditions, and their abilities. Trying to find means to combat diseases and create protective measures, and the availability of the needed medical and health services to cure them in addition to raising general health awareness for communities (1). It is also known as the study for the relation between geography and human health, or the study for the geographical explanations for diseases. So, it represents the linking point between geography on one hand and medicine on another, where each one serves the other without taking it out of its context. That means the researchers have gotten a lot of challenges to defy in order to reveal the unknown about diseases, their developments and the ways to combat them on the right scientific basis (1).

Objectives

The biological environment has been a science that was followed by scientists since ancient times without giving it a clear title, but in our current time, the scientists started to pay more attention to it. The research aims at making a historical case study that sheds light on the beginnings of the concept of biological environment from the ancient scientists' point of view (Hippocrates and Galen) and their contributions to lay the foundation for the principles and concepts for this science, and finding the differences in concepts between the two.

Methods

We will depend in this research on the historical approach focusing mainly on Hippocrates "On Airs, Waters and Places", and then a book of Galen's Chart "Explaining Hippocrates On Airs, Waters and Places" That discussed the concept of biological environment to

highlight the contributions of these two scientists in the field and make comparison between them, and then we will refer to some modern books about the subject.

I. Biological Environment According to Hippocrates

Hippocrates is considered to be the first to speak about the effects of biological environment when he explained the environmental elements and their effect on humans, and the relation between these elements and emerging of diseases (2). He said: "who wants to dig deep into medicine should look into seasons of the year and their effects individually, and get to know the cold and hot air qualities of all places in general first, then the ones of a particular place, in addition to knowing the qualities of water that is different from place to another in means of taste and weight" (3). This leads us to believe that Hippocrates had a clearly deep knowledge of the effects of the surrounding conditions on health and the diseases that could emerge. He also stated: "Whenever a doctor goes into a country he does not know, he should look into his location and the wind and sunrise. Because the effects of these elements differ according to the exposure to north, south, east, or west. He should also have good knowledge of the nature of water people use whether soft, hard coming from high rocky places, salty, or coming from the clumps. In addition to knowing the soil different characters whether it is dry and stripped, muddy and coming from the forests, low and sunburnt, or high and cold. Besides that, he should know their way of living, whether they are fond of drinking and good food and prone to rest, or lead an active lifestyle with physical work eating a lot and drinking a little"(3).

In his book, Hippocrates also mentioned the most crucial factors that affects the body heath and gives it physical and psychological characters, such as air and water, seasonal changes and location.

Hippocrates divided his book into 24 parts, we will summarize the most vital information in it here with several tables in order to simplify the information and make it easy to analyze:

1. Difference in Air and Water Together

Hippocrates has cleared the effects of air on the water, and then studied the effects on the habitants' nature, and the health problems generated by them. We will hereby summarize them (3).

Water and Air	**Hot south winds, lavish salty shallow water**	**Cold north winds, hard cold water**	**Eastern winds, Clear and clean soft water**	**Western winds, Impure water**
Nature of People	- The inhabitants have wet phlegmy heads. - Their stomachs are constantly different because of the phlegm coming from their heads. - Their bodies are sluggish. - Their appetite for food and drinks is low.	- The inhabitants are mostly yellowish than phlegmy. - They have clear min but headstrong. - They have strong appetite for food but weak for drinking. - Their manners are mostly blunt.	The inhabitants have better skin tone, and better health. Have clear voices, higher energy levels and sharper minds.	The inhabitants are yellowish in color, have thick rough voices because of the bad air.
Diseases and Health Problems	**1. Women:** A. Weak bodies and prone to bleed. B. Mostly barren because of bad health. C. Higher abortion rate. **2. Kids:** They have more cases of muscle cramps, asthma and epilepsy.	**1. Women:** A. Rough bodies. B. Distressed deliveries. They rarely have abortions. They are may get tuberculosis. C. Late puberty, irregular and impure menstruation that has less flow and more discharges. They have less milk.	**1. Women:** They have more pregnancies and easy birth. **Diseases** are less frequent and less severe but have similarities of diseases in places with hot winds.	Sickness is quite common, and people have all kinds of diseases without a specific kind.

Water and Air	Hot south winds, lavish salty shallow water	Cold north winds, hard cold water	Eastern winds, Clear and clean soft water	Western winds, Impure water
Diseases and Health Problems ***(Continue)***	**3. Men:** A. Bloated bellies. B. Cold and hot fevers. C. Long winter fevers D. Pimples and hemorrhoids. E. Pleurisy and pneumonia. F. Short term conjunctivitis that goes away quickly. **4. Men over 50:** Could have hemiplegia is they were sun struck or have cold.	**2. Men:** A. Tough and stiff bodies but have disturbed stomachs. They have bad cases of diarrhea. B. Have a lot of internal diseases, pleurisy, and other acute diseases. C. They rarely have conjunctivitis, but when they do, it is usually severe and damages the eye quickly. D. Those under 30 are prone to have severe nose bleeding. Epilepsy is rare among them. Ulcers do not remain long and heal easily.		

2. Difference in Seasons

Hippocrates noticed the keen relationship between seasons and diseases related to each. We hereby summarize them (3).

Season Condition	Diseases	Seasonal Fluctuation
If it rained in fall and winter was moderate with sufficient rain in spring and summer.	The year will be extremely healthy	Not mentioned
Rainy spring, northern dry winter	* More rates of fevers and conjunctivitis cases in summer, in addition to blood differences. * **Women and children:** more death cases with infectious diseases. Who survives, falls into malaria and edema. * **The elderly:** They are less affected.	- If it rained in summer when Sirius is up with winds from north and whirlwinds formed, it gives good hopes and diseases go away, and fall will be healthy. - If it rained in winter and southern winds blew with cool weather, and then dry spring came with north winds and chilly weather: * **Women giving birth in spring:** will have more abortions and illnesses. Their babies will have more disease and death rates if they gave birth in time. * **The rest of people:** will have blood differences and dry conjunctivitis and some people will have migrating infections from head to lungs. * **For people with phlegm and women:** blood differences. * **People with gallbladder diseases:** dry conjunctivitis. * **Old aged people:** will get infections that could be deadly or cause partial paralysis. - If summer came and weather suddenly changed to hot: aforementioned diseases will generate. **The effects of these changes will get less in places with good sunlight, ventilation and water. On the other hand, it will get worse in places with bad location and stagnant water.**

Season Condition	Diseases	Seasonal Fluctuation
If summer was dry	Diseases have shorter terms	Not mentioned
If summer was rainy	It is feared that ulcers may linger for longer times for the least of reasons and people may have bloating and ascites when healing from diseases.	Not mentioned
If summer and fall were southern and rainy, then winter will be essentially bad	-People with **phlegm** and those over 40 will get scorching fever. -People with **gallbladder** disease will get pleurisy and pneumonia.	Not mentioned
If summer was northern and dry, and fall was southern and rainy.	There will be more cases of headaches, serious brain damages, sore throat, flu, and in some cases tuberculosis.	Not mentioned
If the weather in summer and fall was northern dry and it did not rain when Sirius or Ursa Major are up.	-It will be okay for the people **with phlegm**, well moisturized skin and women. -For people with **gallbladder** disease, it will be very bad. It will give them dry conjunctivitis and long scorching fevers, and sometimes depression.	Not mentioned

3. Difference in Geographical Location

Hippocrates noticed the differences among various geographical locations. These differences varied from their manners to bodily characters and even crops and cattle (3).

Location	Description	People Nature
Moderate location between hot and cold	Has lots of fruits, green trees, clear air, good water and always moist. The land is flourished, and cattle are well bred and produces more.	**People characters:** The inhabitants will be fat, beautiful, and medium sized. They rarely differ in size and shape. **Manners:** They are not brave, or patient for hardships, or highly energetic. Most of the population love of pleasures.
Places to the right of the winter sunrise till Palos Meoteds (the boundary between Asia and Europe)	Their seasons and nature of regions are different: **-Big seasonal differences:** their countries are wild and less flat. There is a lot of trees, mountains, plains and valleys. -**Slight seasonal differences:** Places are very much alike.	Some of the people are like their nature of the wet places with mountains and trees. Others are like the dry, thin land, and others are like a land with valleys or like barren plains. **The more difference in nature, we will find more variations in their image**.

Hippocrates did not stop there, but he also listed the characters of nations distributed on Asia and Europe in means of bodily variations, manners and seasonal changes. We will mention of them what is concerned with our research:

In Asian areas (3)

Here, he shows that some of the characters of people in one place could result from natural or human imposed elements, and in generations to follow, it will be inherited elements.

Microcephalic People	**Characters**	**Reasons**
	They are recognized as the people with long heads. It is considered as a noble character. So, they used to press the newborn heads with molds to make it shaped like that.	This character was deliberately imposed, then with time it became **naturally inherited**.

II. Biological Environment According to Galen

As we already mentioned, we will depend in our research on the Galen chart that explained Hippocrates book "On Airs, Waters and Places". We found during our study an accordance and conformity to the most of what in the Hippocrates' book. Galen supported the book in most cases and his role was to explain, but he occasionally added some of his own thoughts and views. Galen, as Hippocrates did, connected bodily health with several natural elements:

- In terms of wind, temperature and humidity. His views came in accordance with Hippocrates (4).
- As for seasonal changes, Galen had the same views as Hippocrates, but he made some additions. In hot and humid times, Hippocrates referred to the diseases that people get and mentioned that it affects those with higher moisture levels and causes them fever. Galen agreed to that and added that it affects the people with dry nature as well because they depend on the natural heat and humidity, but if the heat and humidity became too dominant, they will be negatively affected with it as well (4).

Hippocrates sees that changes in air does not affect the people whom places are exposed to sunrise and have moderate winds. Galen agrees and adds that inhabitants' bodies will be good and strong (4).

Galen also agreed when Hippocrates divided cities into four directions according to wind that blows on them and described the water and wind effects on the people living in them in addition to the diseases they get. So, he only explained what Hippocrates said and occasionally added what he saw as necessary and complementary. In the first city (facing south) and fourth city (facing west), Galen agreed to Hippocrates. In second city (facing north), Galen agreed to Hippocrates in all points and his description of common diseases over there, and added that their boys get hernia and does not go away till it becomes humid and hot. In the third city (facing east), he also agreed with Hippocrates opinion and added that grass and plants are better and healthier (4).

But then, we find Galen **disagrees** with Hippocrates about pleurisy and pneumonia for people with gallbladder disease that get exposed to southern and rainy summer and discomforted fall, like winter. He sees that this statement was added to the book (4).

As for the difference among people in terms of manners and shapes according to the continent or city they belong to, Galen connected, as Hippocrates did, between the manners of people and the terrains around them, but he **differentiated between the inherited and non-inherited characters** by saying:

"If fathers were long headed by nature, their children will be long headed as well, but if they were like that because of a hit or an incident that happened to them or during delivery by midwife, then we cannot say that their children will be alike. As for the lack or having more organs that comes from manmade or accidental incident, we do not see that it will be in the children as if it were natural. An example to that is when someone has gout because of weak feet, his offspring may have gout as well because they inherited the weakness of feet, but who has a limp because of an accident will not get a child with limp, and who becomes bald because of something that he put on his head, then he will not have bald children, but who is bald by nature, then his children will be bald" (4).

- We hereby enlist a **comparison** in development of concepts between Hippocrates and Galen, and the additions that Galen presented in his chart:

	Hippocrates	**Galen**	
		Agreed and Explained	Added
Relation between seasonal change and diseases	Homogenous seasons have less diseases, but seasonal fluctuation will cause a lot of diseases	*	1. Hot and humid weather will not only affect people with phlegm but also the people with dryness. 2. Here he disagreed with Hippocrates in his statement: if summer was southern and rainy, and fall was discomforted, like winter then people with gallbladder disease will get pleurisy and pneumonia. **He saw that this statement was added to the book and was not Hippocrates'**.
Must know the climate of the city, direction of wind, sunrise, water nature and land nature.	It is a must for a doctor to cure people.	*	Nothing
City Division	Divided cities into four directions according to the wind that blows on them and he described the climate, water, and diseases that inhabitants get.	*	1. The second city (facing north): He added that their boys get hernia and does not go away till it is hot and humid. 2. Third city (facing east): He added that grass and plants are better and healthier.
Difference in habits of people, their shapes and manners according to the difference of continent or city they belong to	He connected between people's habits and the terrains around them and eventually the location of their continent. He stated that acquired characters are inherited side by side with the natural characters.	*	As for the bodily characters, Galen differentiated between what is inherited and non-inherited.

Results and Discussions

- Humans have noticed since ancient times the climate role and extreme effects on their live and behavior, and noticed the direct effects of these elements on the body and the nature of relationship between the climate conditions and biological actions of the human body.
- Hippocrates had a pioneering role in clearing these effects as he mentioned in his book "On Airs, Waters and Places". He also cleared that differences in shape and behavior between places are subject to various climate conditions. Then he gave a detailed explanation about the diseases that people get clearing that it varies even from men to women and elderly to children, and even for pregnant women.
- Galen explained in his chart the information that Hippocrates mentioned in his book. His opinions came in accordance and conformity with Hippocrates' and added some of his explanations and opinions.
- Hippocrates had a sharp foresight and analogical ability. He compared people manners with shapes and surrounding terrains. Galen was not of a less ability when saw the causes and explained what was not clear enough.
- This sharp sight that Hippocrates had enabled him of noticing that the effects of climate elements on the physiology and manners of people are not all the same. Each element had a different effect, and when two or more effects come together, they will result another different effect. Galen had the same opinion.

- Hippocrates found a keen connection between heat and humidity, and their effects on human health. The new researches approve that where one study stated: "the health effects of hot weather will differ if the air was dry or humid. The hot and dry one will cause what is called sun strike or hot blow (over 45 degrees). One the other hand, the hot and humid will result discomfort. The cases of extreme hot or cold waves will result increase in death rates for the children and elderly or will cause specific diseases when these changes suddenly happen"(5).
- Hippocrates and Galen noticed that temperature, wind, and humidity are the most crucial factors affecting human health. The modern researches indicate the same where we find them stating: The most effective climate elements on the health and comfort of human beings and the diseases related to them are the sun rays, temperature, wind and relative humidity (6).
- The studies and researches done by international organizations emphasize that climate changes and natural disasters that increased during the last decade contributed to the spread of many infectious microbes' related diseases, and that led to increase in death rates and infections among people in the world (7). This was recognized by Hippocrates and confirmed by Galen.
- Any increase on the heat levels and extra rainfall or lack of rain especially during the unusual times leads to increase in activity and breeding of insects that get affected by the slightest change in temperature. These insects help transport and spread many viruses in nature (7).
- One of the confirmed consequences to the climate change is the increase in infections and death rates related to heat, especially heat waves that cause fatigue where extreme temperature cause heat stress that intensify the disease and raises death rates. Many studies cleared that the death rate related to heat is also tied to many other climate elements like relative humidity and wind speed. The shared effect of these elements form what is known as (external heat) that is felt by human senses, and in general, healthy people have effective mechanisms of heat adjustment that protect them from the external heat. To do so, heat should be emitted from the body, either by radiation, or by latent energy used to vaporize water from the body by sweating or blood vessel expansion. In general, there is a clear heat threshold in most of human societies studied by the International Climate Organization that referred to the existence of critical heat threshold for heat fatigue tolerance, and it differs according to the geography of the place. Any increase over that threshold will make these mechanisms invalid because this threshold depends on the average of heat in a location and abundance of extreme heat. For example, the heat threshold for Saint Lawrence City, south of USA, is 36° while it is 32° for Detroit in the north (8).
- The increase in repetition of extreme weather changes contributes indirectly in changes to human health, besides the direct effects that results the increase in spread of infectious diseases. The data from World Health Organization refers to the spread of specific diseases after extreme weather conditions like tornadoes and floods that follow where the disease transmitters increase. Scientists agree as well on the importance of the role that heat average increase plays in enabling the insects and microbes to spread where extreme cold waves were preventing them to. Mosquitoes started going up the mountain tops spreading several types of diseases where low degrees protected them previously because some germs breed more in warm weather, and hence, there will be more germs causing more infections. Some of the other possible effects discovered by researchers in health field are the possibility of rift valley fever epidemic spreading, which is a deadly disease transmitted by mosquitoes and synchronizes with the increase of unusual warmth years. Some expect that if climate becomes warmer and more humid permanently, rift valley fever epidemic will be more frequent besides malaria and yellow fever incase winter stayed warm and allowed longer life span for seasonal mosquitoes that spread the disease (9).
- Some of the studies that took place in Sudan expected the spread of malaria on larger scale and the increase of cases in the area because of climate changes related to weather temperatures (10).
- All modern researches done in various countries indicated the huge effect of changes in heat and humidity factors on the health. These changes were affecting on people living in various places and having various conditions. We found that Hippocrates described the effects of these changes on the people with phlegm and Galen confirmed that and added that it affects the people with dryness which come in more accordance with the modern researches.

- Many scientists considered the climate elements to have a direct effect in the human body. So, Humans always targeted and aspired the safer and more comfortable atmosphere to achieve their basic needs and the possibility to maintain better health away from various diseases and epidemics. In spite of the great advance that humans made in all life fields, they are still helpless when it comes getting sick, especially respiratory diseases. This led many scientists to form a new branch of science called Climate Medicine, which is credited to doctors more than geographers (Climate Researchers). Hippocrates (337-460 BC) was the first to take interest in this science by closely following up the cases by observation and experiment, and classified diseases according to seasonal changes (11).
- Swamps home a wide variety of some living organisms like insects and parasites that contribute directly or indirectly in transmitting some diseases to humans. These creatures inhibit the stagnant water because of its rich environment with organic substances that represents the ideal nutrient for them. The diseases these creatures transmit are considered to be among the most dangerous. On the top of them comes the malaria that transmits by the bite of a specific female mosquito which has the microbe in her saliva to the human body. Malaria patients suffer from several side effects like anemia, inflation of liver and spleen with jaundice, rash, intermittent fever (12). So, in result, stagnant water could damage the spleen. This was stated by Hippocrates, and Galen added that it could damage the liver.
- Studies proved that features of people divide into:
  - **Inherited features**: Which are inherited and passed through generations.
  - **Acquired features**: Which are non-inherited but people get from their surroundings (13).

Conclusion

The rising interest in biological environment started since ancient ages at the time of Hippocrates and until our current day. Though this science was not clearly and specifically titled, Hippocrates had noticed and explained it. He was then followed by Galen who confirmed and emphasized his views, and added views of his own. Their works formed the cornerstone for an advanced field of science that is considered in our day as one of the most important fields of science used for the study of geography and medicine.

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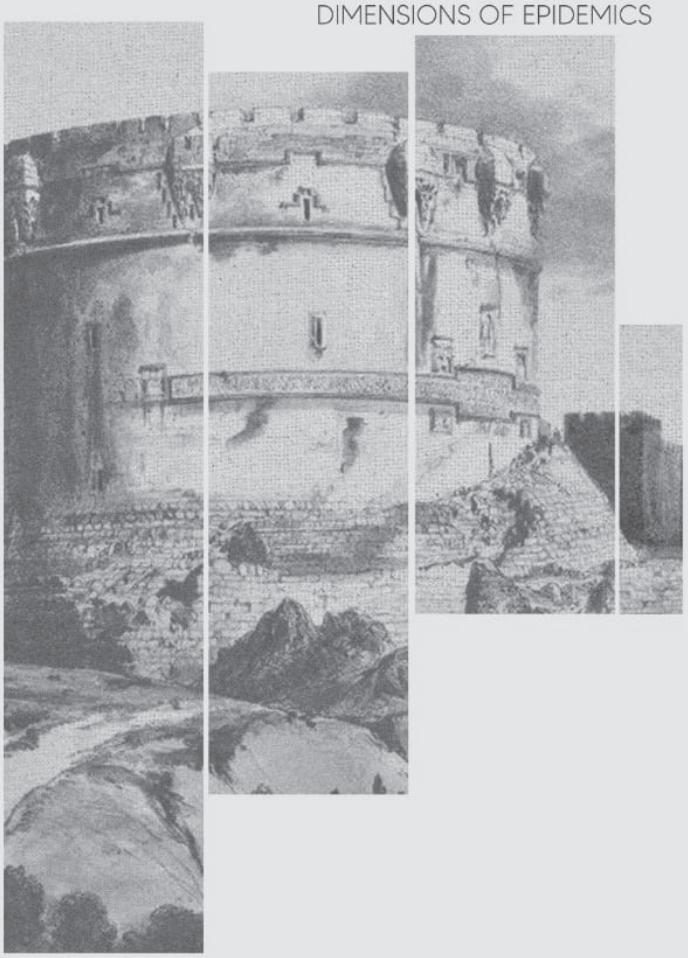

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