Volume 11, No.4
August 2022
ISSN 2634 8071

JBIMA | Journal of the British Islamic Medical Association

JBIMA@britishima.org
www.britishima.org

Journal of the British Islamic Medical Association

Vol 11 - No. 4 | August 2022 | www.jbima.com

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Journal of the British Islamic Medical Association

Editorial

Vol 11 - No. 4 | August 2022 | www.jbima.com

JBIMA Editorial

Dr Sharif Kaf Al-Ghazal, *Editor in Chief*

Assalamo Alaikom

Leadership is crucial to the effectiveness and success of any organisation. Accountability starts at the top, and executives must be making the right decisions; as well as reflecting the diversity of the workforce. And whilst over 40% of the NHS medical staff come from BAME backgrounds, the number of BAME senior leaders is nowhere near this. The NHS has developed its so called long term plan for the 21st century to address this, but this is an issue that needs to be tackled immediately.

There are huge challenges facing BAME medical staff; racism is present and whilst there is often a lot of rhetoric celebrating diversity, this doesn't go very far. Genuine efforts to break down barriers for BAME healthcare professionals are short lived, and equality seems to be the order of the day, not equity. It is the latter of course which is so crucial, and helps create the level playing field an already disadvantaged group needs to move forward. Deep seated cultural norms mean that efforts may be misdirected and even when the attempts to create pathways are authentic, they rarely succeed.

As we start to re-build our landscape in what is slowly becoming a post-Covid world, the light is shining even more brightly on these unfair realities. BAME healthcare staff were vastly overrepresented in the number of Covid deaths over the past 2 years. But little seem to has changed. One thing is clear; any change for the better will go beyond a simple top-down directive. Change must be institutional and organisation-wide. It must be coherent. And crucially, it must also be established in Medical Schools across the UK. These are the incubators of our future doctors and students must be empowered to seek and create change themselves. There are brilliant examples of Muslim Medical Societies working within their Student Unions to enact change and offer Muslim students (who overwhelmingly tend to be BAME) spaces to advocate for their needs.

We at BIMA would like to support a leadership program for our medical, dental and pharmaceutical students and also for our junior trainees. The aim of this program is to focus on developing tailored practical skills within high value health care projects, tuition by leading clinicians and experts, bespoke mentoring by BAME role model health care leaders and clinicians and opportunities for national networking. We hope that this will empower our young Muslim students and trainees and, in time, we'd like to be able to support the development of an academic master's level program - in the shape of an intercalated year - focusing on this. This would include elements of Islamic values and ethics tied in with management theory and leadership.

A significant number of our volunteers are junior doctors and other healthcare professionals and we do well in recruiting the youth, but we must do better, and we must have relationships with Muslim Medical Societies at the university level too.

Our youth are our priority. Not just for BIMA, but for the future of our NHS. We will do all we can to empower you.

Very best wishes,

Wassalam.

Dr Sharif Kaf Al-Ghazal
JBIMA, Editor in Chief

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Ethics

Vol 11 - No. 4 | August 2022 | www.jbima.com

Comparative Study between Islamic and Western Bioethics : The Principle of Autonomy

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Keywords: *Islamic bioethics, western Bioethics, bioethics, autonomy,*

Abstract

Western ethics has developed into a philosophical science, drawing more upon human reason and experience as the arbiter between right and wrong action. This development is not paralleled in Islamic intellectual discourse. Islamic ethics incorporates various philosophical traditions but draws its resources mainly from religious texts. Islamic ethics is rooted in the Holy Qur'an, and the tradition of the Prophet Mohammed (PBUH). The four general principles of biomedical ethics are: (1) Respect for autonomy, (2) Beneficence, (3) Non-maleficence, and (4) Justice. Islam upholds the underlying virtue of these four principles, but diversity arises in their interpretation and practical applications. In the Western bioethics, patient's autonomy and self -determination prevails in all sectors of social and personal life, a concept unacceptable in Islam.

Islam covers all aspects of life as an integrated system emphasizing the importance of the values and practices to achieve divine satisfaction. All medical decisions must be guided by the faith, which in practice implies adherence to the Shari'ah (Islamic law), participation in lawful matters, and the avoidance of forbidden points such as sexual promiscuity, alcoholism, illicit drug use, transgender, and assisted suicide.

Introduction

The world Muslim population is around1.8 billion followers worldwide, and increasingly growing at a rate of 1.8 per cent annually. The majority of which live in Islamic countries and an appreciable number live in non-Islamic states. Many Muslim physicians work in the Western countries. Citizens from Muslim-majority nations made up 4.5% of the US physician workforce in 2019.[1]Despite modernity and the forces of secularization, religion lies at the heart of most cultures. Padela et al. found that 55 per cent of doctors in US hospitals agree that their Islamic/religious beliefs influence their medical practice.[2]

Modern science was developed in the West within an atmosphere of hostility against the church. Advances in the area of science and technology were paralleled by repulsion against religion and faith. Technological progress in the field of medicine has created dramatic interactions with traditionally held values.[3] Some Muslims are presently caught at a crossroad between the traditional and the modern values. The attraction of material wealth, individualism and sexual freedom has threatened a section of Muslim youth and educated elite to side away from the religion of Islam.[4]

The Holy Quran commands Muslims to not only do good but also to forbid evil actions. In Islam, individuals have an apparent picture of what is right and wrong as enshrined in the Quran and Sunnah (tradition of the Prophet).For Muslims, being rational does not mean only to justify things intellectually but also to examine every single aspect of moral conduct to determine whether such behaviour aligns with Islamic law or not.

While the medicine practiced by Muslims and for Muslims is generally the same medicine practiced in the West today, the medical ethics may be different. The universal applicability of the Western framework of professionalism in non-Western contexts has been recently questioned.[5,6]To date, few studies have investigated the perception and implementation of the physician charter in non-Western cultures.[7] The use or non-use of a renowned medical treatment by Muslim doctors will sometimes be guided more by ethics derived from Islamic law than by purely medical considerations.
The modern person rarely thinks of medicine as having any religious or ethnic boundaries.

A glance through medical libraries and catalogues of ethics reveals that there are Jewish medical ethics, Catholic medical ethics, etc. Islamic medical ethics is almost overlooked as a distinct branch of medical ethics but gained importance in the second half of the 20th century.[8,9]

Bioethical deliberation is inseparable from the religion itself, which emphasizes continuities between body and mind, the material and spiritual realms and between ethics and jurisprudence.

Islamic bioethics is an extension of Shari'ah (Islamic law) which is based on two foundations: The Qur'an and the Sunna. Development of Shari'ah over the ages has also required Ijmaa (consensus of all competent jurists after the death of the Prophet Muhammad Peace Be Upon Him (PBUH) and qiyas (analogy) using the human reason when no clear rule is found in the Quran or Sunna, resulting in 4 major schools of jurisprudence. Where appropriate, consideration is also given to maslaha (public interest) and urf (local customary precedent).
In absence of an organized "church" and ordained "clergy" in Islam, the resolution of bioethical issues is left to qualified scholars of religious law, who are called upon to provide rulings on whether a proposed action is forbidden, discouraged, neutral, recommended or obligatory.

To respond to new medical technology, Islamic jurists, informed by technical experts, have regular conferences at which emerging issues are explored and consensus is sought. Over the past few decades, these conferences have dealt with such issues as organ transplantation, brain death, assisted reproduction, and even genetic engineering and stem cell therapy. [9]

Western secular model

The Western secular model of bioethics had its primordial origins in the West as a severe reaction against the authoritarianism of the Church. It was grounded in secular philosophical principles relying on human reasoning alone and without any religious contribution.[4] Secular Western bioethics can be described as rights-based, with a strong emphasis on individual rights.

The principalism approach to biomedical ethics is broadly accepted and discussed among Muslim scholars. According to this approach, the four general principles of biomedical ethics are: (1) Respect for autonomy, (2) Beneficence, (3) Non-maleficence, and (4) Justice. One can easily find all these universal principles, not only in the Holy Qur'an and among the "sayings" of the Prophet

(PBUH), but also in teachings of many other great Muslim scholars throughout the history.

There are a lot of similarities between western and Islamic values. Both values have the same intention of nurturing better mankind. Two western values, namely "Power" and "Hedonism" have no direct link with Islamic values. Muslims believe that only God the Exalted has the ultimate will and power over life and death. Islam encourages the attitude of promoting "maslahah" rather than focusing on worldly pleasures.[10] In Islamic Ethics, the basic assumption is faith in God (with other pillars of Islam) and morality is the attempt of each individual as well as a society to approach him as far as possible. God alone defines the standard of right and wrong. God's commands are purposeful and His will extends to all areas of life and every field of action.

In medicine, there are sometimes difficult decision-making options for the patient's care.A physician may have to decide for his/her patient in light of available knowledge, his/her experience, his/her peers and consensus of the community. In addition, a Muslim physician derives his/her conclusion from rules of Islamic laws (Shari'ah) and Islamic medical ethics.

The first main principle of Islamic Medicine is emphasis on sanctity of human life which derives from the Qur'an: "If anyone saved a life, it would be as if he saved the life of all mankind".[11] The second main principle is the emphasis on seeking a cure. The Prophet Muhammad (PBUH) said: "Seek treatment, for God the Exalted did not create a disease for which He did not create a treatment, except senility".[12]

The main feature of Western bioethics is the separation of religious and moral values and confining them to the private domain of individual conscience. The distinction of Islamic medical ethics vis-à-vis principilism-based medical ethics lies in it giving a religious basis to morality. The human being according to the Islamic dogma is created by God and he/she should obey the orders of God, as revealed by his Messengers. God himself gave human beings a degree of autonomy to choose between things and hence he/she will be held responsible for their actions.[9,13]

A Muslim physician should make a decision in the best interest of the patient, whether Muslim or non-Muslim, and without imposing his/her religious views on the patient.

The Role of the Family

The Western attitude of individualism it is not accepted in many societies. In Asia, Africa, and the Middle East the family plays a major role in medical decisions. The patient whether he is elderly or a young person, has to listen to the opinion of his close family to the mode of treatment he/she is going to accept.[9]The role of the family and close friends should be respected in places where they have different philosophies and cultures that differ greatly from Western liberal, individualistic patterns. Even in the West, with different minorities, e.g., Chinese, Indians, Pakistanis, etc., the role of the family should be respected as the patients themselves agree to this role, and health providers have to understand that there are different cultures that do not give priority to autonomy, as it is understood in the West.[13]Beauchamp and Childress defended the right of patients to choose whatever they find appropriate. They can delegate decision-making to a member of the family, a proxy or even to the treating physician.[14]

In most countries of Asia, Africa, and the Middle East there is no health insurance for the public at large and the family usually bears the burden of any cost of medical intervention.

A Muslim patient lives in social coherence, in which influences of the relatives play their role. Healthcare practitioners should not always allow patients' families to control what can or cannot be disclosed to competent patients. This is particularly important when patients are approaching death so that they may address their material and spiritual wishes—among other needs—as they prepare for death.15

Autonomy

Autonomy is a Greek word, autos: self, nomos: govern, rule, i.e., self-rule or self-government. In order to have autonomy two conditions are essential: Free will and capacity of intentional action by an adult competent individual. Personal autonomy means self-rule free from being controlled by others and from inadequate understanding that prevent meaningful choice.[9]

The concept of autonomy in Western culture emphasizes individualism, personal gratification, and self-actualization. [16]Within such a paradigm, sexual acts between any consenting adults, abortion, and one's right to euthanasia or suicide are seen as acceptable variations

of the norm and secular bioethics does not offer any limits.The right to self-determination, while highly regarded, is not absolute in Islam, as humans actions and hence freedoms are curtailed by law, public and individual conscience. Islam seeks a balance between these three concentric circles.[4]

Strict adherence to the Western medical ethics and autonomy is insufficient to solve ethical dilemmas in modern medicine, as it denies the role of faith in human being.[3]Islamic jurisprudence acknowledges autonomy as stipulated by the assertion that no one is entitled to dispose the right of a human being without his/her permission.[17]

The Holy Qur'an declares "there is no compulsion in religion" and each person has the full will to accept Islam or refuse it "Then whosoever wills, let him believe, and whosoever wills, let him disbelieve".[18]The Qur'an said to the Prophet Muhammad: "So, will you (O Muhammad) then compel mankind, until they become believers."[19]

Religious morality is not incompatible with human freedom and responsibility. The Qur'an is replete with verses that orders freedom of faith and human personal responsibility. The Qur'an puts its trust in the rational power of human beings to distinguish between truth and falsehood.[20]

The practice of contemporary medicine has been tremendously influenced by Western ideas and it is assumed by many that autonomy is a universal value of human existence.[21]

Limits of Autonomy

In the West, freedom is equal to autonomy and is regarded as a distinct value category[22] . Islam does not permit man to act as he wishes but limits him with certain rules. These rules are basically from the scripture and the life of the prophet (PBUH).Although the underlying essence of an individual's autonomy is something which can be said to be intrinsic to the Islamic faith, the practical outward manifestations with relation to public interest, and the ultimate view of the human being's subservience to God contrast significantly with the Western philosophical model.Islam, on the other hand, does not permit man to simply behave, or indeed misbehave, as he wishes, but rather gives a holistic set of guidelines for all facets of life and an example in the life of the Prophet[23]. This is followed by the free will to either accept or reject the divine command: 'Let there be no compulsion in religion: the Truth stands out clear from Error'[24]

Patients have the right to choose, as well as the right to accept or to decline information. Health provider should explain all facts and possibilities of management, salient side effects and leave decision to the competent adult patient or his guardian (innon-competent). If the patient himself asks the health provider for his advice, he should give it.

The freedom of one person cannot, in anyway, interfere with other people's freedom; otherwise it will be a hegemony or dictatorship. The limit of the freedom is respect of others freedom, faith and conduct as long as it is not going to disturb the community or sects in that community.

The rights of any one are reciprocated by duties. Those who speak of woman's rights to abortion, as the fetus is part of her body, and she, according to their point of view, can remove that part if she wishes. There is a fallacy here; the baby in her womb is another life (formed from both parents), and it is an independent new life though still needing the mother's placenta and womb for its growth. Killing that fetus (baby) is killing another life or at least (in its early stages) a prospect of another life[9].

In Islam, freedom means to relieve oneself from body slavery and to select consciously the correct way. It has a more extensive concept than freedom in the West and conveys acting based on conscience rather than deliberately. In Islam, freedom directs human to the right/divine way.

Muslims feel very strong that it is God who does the actual healing, the doctor being only the agent for the will of God. For a Muslim patient, absolute autonomy is very rare, there will be a feeling of responsibility towards God[13].

In Islamic context, the priority appears reserved for the principle of public benefit and the collective interest takes precedence over that of the individual autonomy[25].

Furthermore, the family often remains the important subject for the patient's decisions in difficult situations.

The human being in Islamic teaching is entrusted with his body, his faculties, his youth, and his fortune. He cannot mutilate himself, or do harm to himself by smoking,

taking drugs or imbibing alcohol. Health provider should, in Islamic teachings, encourage the patient to avoid risky behavior and life-style which would encroach on his health.9It is obligatory for Muslim physicians to dissuade or even prevent hazardous lifestyle and behaviors that undermine individual and collective well-being, such as sexual promiscuity, alcoholism, environmental pollution, illicit drug use, and smoking[26].

These activities are confined within the sphere of personal autonomy in the West and are thus regarded as an individual's choice. In Islam, an individual's freedom of choice is constrained by the harm it causes to others. Here again, the individual's autonomy is denied by the Islamic injunction on nonmalficence[3].

Although autonomy remains a central doctrine of bioethics, it should not be the absolute privilege of the patient but rather a shared responsibility between the patient, family, and the physician. Promoting patient autonomy does not mean that the physician's expertise should be ignored or disregarded.[3]

The physician is not only a by-stander providing data alone, but a caring person for his patient or client. A patient who has had bypass surgery may want to continue to smoke or a patient with bacterial meningitis may refuse antibiotics. Other examples concern a patient's right to demand treatment that the patient wants but that the physician thinks is unnecessary, inappropriate or even harmful.9This attitude is different from the Western type of autonomy which keeps a distance between the health provider and the patient.

Islamic bioethics is straight-forward in prohibiting reproductive cloning on its own features and also guess social chaos and anarchy. Western secular bioethics has both arguments and counter arguments both for and against this scientific innovation.

Transgender

One of the hot topics that have been considered in the public sphere nowadays is the issue of the transgender or Transsexual phenomenon. Transgender is related to the problem of gender identity. It refers to the condition in which the perpetrators identify their identity and gender differently from their sex biologically. Current discussions on gender and sexuality are largely influenced by Western socio-cultural practices. Some current views and practices on gender and sexuality are not consistent with traditional Western Christian and Islamic values.[27]

Transsexuals are people who experience a gender identity that is inconsistent with their assigned sex and desire to permanently transition to the sex or gender with which they identify, usually seeking medical assistance (including sex reassignment therapies, such as hormone replacement therapy and sex reassignment surgery) to help them align their body with their identified sex or gender. In other words, these are persons who are healthy and have fully developed parts of the body, but they change their sex only to satisfy their sexual or inner pleasure. The process of switching to other sex is based on surgery which is done by changing the male organs to female or vice versa. A surgeon removes the penis and testicles of males and makes a hole in the vagina and gives hormones in order to grow up breast and female voice. If a female wants to change her sex, then a surgeon removes her female sex organs and plants an artificial penis, and gives hormones in order to grow up beard on face, etc. But these changes are just apparently and do not have any actual function. [27]Artificial female or male is not able to perform sexual reproduction or have any sperms or mensuration etc.

There is a steady rise in the number of sex change surgeries being performed annually, with a total 8304 in 2017 to a total of 9576 in 2018, with 2885 of male to female surgeries and 6691 of female to male surgeries. The reported complications based on the limited available literature are variable, with certain procedures like double flap phalloplastyin transgender men as high as 53%.[28]

Poor mental health and psychological distress are disparately high among transgender people. In the USA, where transgender adults represent an estimated 1·4 million individuals, according to the National Centre for Transgender Equality, 40% report attempted suicide and depression, 33% anxiety, and 26% alcohol or drugmisuse.[29]

Transgender is totally prohibited in Islam and considered to be impermissible in accordance with the Holy Quran and the Prophet's sayings. It is not possible for anyone, no matter who he is, to change the creation of Allah, may He be exalted, from male to female or vice versa. The Quran mentionsthe saying of the Satan:"I will mislead them, and I will create in them false desires; I will order them to slit the ears of cattle, and to deface the (fair) nature created by Allah."[30] The Hadith in Sahih Bukhari states that "Narrated Ibn' Abbas: Prophet Muhammad

cursed effeminate men who assume the manners of women and those women who assume the manners of men." According to the Hadith in Sunan Abu Dawud "Narrated Abu Hurayrah: The Apostle of Allah cursed the man who dressed like a woman and the woman who dressed like a man."

In Islam, the person with somatic sex ambiguity due to a disorder of sex development (DSD), such as 46,XX congenital adrenal hyperplasia or 46,XY androgen insensitivity, is recognized as "khunthah"[31] (literally translated as hermaphroditism).

Transgender is different from "sex reassignment" or "sex correction". The process of "sex correction" is done for people who have a defect in the sex glands. This results in the presence of a "suspicious" person between male and female which is known to jurists as "hermaphrodite" and his sexual organs are ambiguous between masculinity and femininity. He can usually have surgery to establish his true and correct gender. The operations of "sex correction" are correction from the wrong position to the correct position, and it is permissible in Islam. This treatment is not altering but correcting physical abnormalities.

In many European countries today, freedom to choose sex is encouraged in the early school stages, and there are organized campaigns in this aspect to influence public opinion, and to instil that concept and encourage people to it. Some Western legislations consider sex conversion as a human right that may not be restricted by any restrictions, to the extent that these legislations, as is the case in Denmark and Norway, have created legal sex conversion. Some homosexual patients who are fully aware of their sexual preferences assume the pose of having gender dysphoria in order to justify their sexual proclivity to continue with their relationships with other males or seek male attention. Homosexuality is prohibited under Islamic law.[32]

End of life

Based on the Prophetic tradition, patients are not prohibited from seeking treatment to cure their illnesses. At the same time, they can also choose to be patient with the illness and abandon seeking treatment. According to al- Ghazzālī in his notable work *Iḥyā' 'Ulūmuddīn*, refusing treatment is made due to certain conditions[33], which include the following: i) A person who is suffering from a chronic disease and the recovery is unlikely. ii) A person who is terminally ill and death is imminent.iii) A person who chooses to stay patient with the hope that the illness that he/she is currently suffering from will elevate his/her status in the sight of God. iv) A person who was sinful throughout his/herlife chooses to stay patient with the illness so that his/her patience will be the source of forgiveness from God.[33]

According to the juridical opinions from many scholars, abandoning treatment is permissible and not considered sinful when there is lack of established efficacy with regards to the treatment. Consequently, if there is no treatment with a probable clinical efficacy to cure the illness, especially in the case of the first two conditions that were mentioned by al-Ghazzālī, seeking treatment is deemed not to be needed.[34,35]

In end-of-life cases, the doubtful efficacy of life support is often raised. End-of-life patients are included among those who are permitted to refuse treatments. Medical practitioners are also not obliged to perform treatments that bring doubtful benefits to the patients[36], particularly life sustaining treatment in end-of-life care.

In Islamic ethics, an individual's welfare is intimately linked with his or her family and community. Hence, neither autonomy nor paternalism is the determining factor in deciding a course of action in matters relating to end-of-life decisions, but rather, a joint decision made by all parties associated with the patient, which may require the involvement of religious authorities, if needed.[37,38]

Advance Medical Directive

Advance Medical Directive (AMD) is not a Western innovation. It was practiced by the Prophet Muhammad (PBUH) fourteen centuries ago. Advanced directive is a document in which a healthy person explains in writing which medical treatment he/she would accept or refuse at that critical juncture when he/she may not be in a position to express his/her wishes in case of emergencies, terminal illnesses, and situations where they may be incapable of making decisions. In other words, this document assists the attending physician to withhold or withdraw certain medical procedures and allow the patient to die naturally.

The following may be incorporated into the living will:

a) Request to discontinue treatment: A terminally ill Muslim patient can request that treatment be discontinued if the treatment would not in any way

improve his/her condition or quality of life based on the Islamic juridical principle of *la dararwa la dirar* (no harm and no harassment). The intention here is not to hasten death, but the refusal of "overzealous" treatment. However, "palliative" care in the sense of maintaining personal hygiene and basic nutrition should not be discontinued.

b) Instruction to switch off the life-support equipment:
A healthy Muslim may instruct that should he/she, as a result of a terminal illness or massive head injury, be diagnosed as brain dead, then the life-support equipment should be switched off.

c) Inclusion of organ donation.[9,39]

In Islam, respecting the wishes of patients is in line with the tradition of Prophet Muḥammad which was narrated by his wife, 'Ā'ishah saying: "We poured medicine in one side of the Prophet's mouth during his illness and he started pointing to us, meaning to say, "Don't pour medicine in my mouth." We said, "(He says so) because a patient dislikes medicines." When he improved and felt a little better, he said, "Didn't I forbid you to pour medicine in my mouth?" We said, " (We thought it was because of) the dislike, patients have for medicines. He said, "Let everyone present in the house be given medicine by pouring it in his mouth while I am looking at him, except `Abbas as he has not witnessed you (doing the same to me).'[40]

The consent of a patient to accept or refuse medical treatment corresponds to the above tradition, which was exemplified by Prophet Muḥammad (PBUH). His refusal of treatment in the above tradition is similar to what is intended by AMD, which is to empower patients to decide and determine their choice of future healthcare. Therefore, it can be inferred from the Prophetic tradition that Islam does not prohibit the implementation of AMD in decision-making. Patients must be able to understand and accept the consequences should life-sustaining therapy be withheld or withdrawn. The attending medical practitioners must be able to identify the capacity of a patient to make decisions. Medical practitioners in charge must honour the wish of the patients to refuse intervention. However, there are clear limits that must be adhered to in Islam, such as the prohibition of the following:

i) euthanasia and assisted suicide; ii) refusal of curative and life-saving treatment and iii) refusal of basic care, which includes provision of artificial nutrition and hydration if the intention is to hasten death.[39]

Assisted dying

Life is given by God and cannot be taken away except by Him or with His permission. Preservation of life is one of the five basic purposes of sacred law. The Qur'an says "… if anyone killed a person, not in retaliation of murder, or (and) to spread mischief in the land - It would be as if he killed all mankind, and if anyone saved a life, it would be as if he saved the life of all mankind…".[41]One cannot take one's own life: "And do not kill yourselves (nor kill one another). Surely, God is Most Merciful to you".[42]

The physician has no right to terminate any human life under his care. There is pain and suffering at the terminal end of an illness, but Muslims believe there is immeasurable reward from God for those who patiently persevere in suffering. "Only those who are patient shall receive their rewards in full, without reckoning."[43]

Giving pain-killers including morphine derivatives is acceptable in Islam if the pain is severe.

Assisted dying is increasingly advocated in public discourse as a humane response to a terminal prognosis and distress on the part of selected patients, and their care providers.[44]

There appears to be momentum internationally to permit some form of assisted dying within legal processes, with the Governments in areas of Australia, Germany, Ireland, Portugal, Spain, and New Zealand being the latest to produce legislation in support of these practices[45].

In Western Europe, an increasing and strong public support for euthanasia and physician-assisted suicide has been reported; in Central and Eastern Europe, support is decreasing. In the United States, less than 20% of physicians report having received requests for euthanasia or physician-assisted suicide, and 5% or less have complied.[46] Bauer argues that Euthanasia cannot be restricted to exceptional cases, based on the idea that the patient's autonomy is to be valued more highly than their actual illness. If autonomy is of absolute value, it could not be limited to the most serious cases of illness.[47]

Islamic law clearly prohibits euthanasia in all circumstances. However, the wishes of the patient not to have his dying prolonged artificially in the presence of hopeless prognosis need to be respected and abided by. Such wishes may be declared in the accepted "standing Do Not Resuscitate (DNR) orders" in certain hopeless medical conditions.[48] Assisted dying or euthanasia is not allowed even if the patient insistently request it and his family agree to it. No one is authorized to deliberately end life, whether one's own or that of another human being.[49]

Conclusion

The concept of autonomy in Western culture emphasizes individualism, personal gratification, and self-actualization. Autonomy is an important ethical principle that is basic to human dignity, however the obligation to respect autonomy is not absolute as there are challenges to its universal validity.

Islamic bioethics affirm health preservation and disease prevention. Islam does not permit man to act as he wishes but limits him with certain rules.Muslim patients can make their own choices and decisions about medical care and treatment within the defined limitations of the Islamic law (*Sharī'ah*).Medical decisions are guided by the faith, which in practice implies adherence to the Islamic law, participation in lawful matters, and avoidance of forbidden actions. For example, transgender, cloning, and assisted suicide are prohibited in Islam.

Islam is not just a religion, but rather a way of life. As a comprehensive religion, Islam covers all aspects of life in an integrated system asserting the importance of the values to achieve divine satisfaction.

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Journal of the British Islamic Medical Association

Ethics

Vol 11 - No. 4 | August 2022 | www.jbima.com

Pursuing *Tas'heeh al-jince* (*gender-affirming surgery)* for the *khuntha* (intersex person) who experiences *gender dysphoria*: from the viewpoint of Islamic Fiqh and bioethics

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Keywords: *fatwas, gender-affirming surgery, gender identity, intersex, Shariah law*

Abstract

This article discusses the social construct of *khuntha* from an Islamic perspective. Assignment of sex at birth and monitoring gender identity beyond puberty is also examined through the lens of Islamic jurisprudence. *Gender-affirming surgery* (GAS) is investigated in light of ground-breaking fatwas in recent decades that permit the procedure. The main arguments underlying the view of permissibility include the personal need to address *gender dysphoria*, the personal desire to correct one's physical attributes, and the absence of explicit prohibition in Shariah law. Because the surgical operation is irreversible with lifelong consequences, several ethical issues are highlighted that need to be considered collectively by a panel which needs to include the intersex person, their loved ones, gender psychologists, surgeons, and the fuqaha.

Introduction

Intersex persons have been acknowledged in Shariah law as equals to persons who are cisgender. This acknowledgement includes mention of intersex persons in the books of tafseer, hadith, and fiqh, which are foregrounded in this article. However, due to the rarity of intersex persons in society (around 1.7% of the population)[1], most Muslims might never interact with an intersex person or ever realise that there are any in their communities. Research on intersex from an Islamic perspective is growing. For a list of fatwas related to intersex persons, read Zabidi for an analytical review of contemporary fatwas in resolving biomedical issues over gender ambiguity [2] and Malim and Padela wherein they review 23 online fatwas [3]. In this article, I hope to provide a fresh perspective on the matter of gender-affirming surgery (henceforth *GAS*) that involves collaboration between the intersex person, their loved ones, medical experts, and the fuqaha. I also point out key gender terminology that is used in fiqh in tandem with terms used in gender studies to empower the reader to have an interdisciplinary understanding of gender matters and to help make distinctions between aspects of gender to avoid conflating issues. In Table 1, I propose an intersex fiqh network which shows in tabular form the concepts discussed in this article and the way different aspects of gender matters relate to each other using current biomedical nomenclature.

Socially constructed terminology for sex and gender

In classical Islamic jurisprudence, *'sex'* in the biological sense was realised by the noun *'jince'* as in *'jince al-rijal'and 'jince al-nisa'* meaning the male and female sexes respectively. Gender identity, on the other hand, was referred to by the act of *'iqrar'*to mean an individual's self-identification that was acquired from a strong sense of their gender; for instance, Imam

Muhammad al-Shaybani (d. 805 CE) writes in his work al-Asl *'aqarra annahu rajul'* and *'aqarra annahu mar'a'*meaning 'one self-identifies as male' or 'female' respectively[4]. Bearing in mind this sophisticated understanding realised through linguistic choices in Arabic by classical Muslim jurists to represent the difference between sex and gender, the use of their alternatives in English is appropriate when discussing the biological and social representation of individuals. The UK government refer to sex as "the biological aspects of an individual as determined by their anatomy … generally male or female something that is assigned at birth" and defines gender as "a social construction relating to behaviours and attributes based on labels of masculinity and femininity" [5]. A notable difference, however, between the Islamic perspective and modern definitions of gender is that the former views gender as *'fitrah'* meaning natural, whereas the latter views it as a 'social construct'.

The Holy Qur'an lists only two types of sexes and genders namely male and female; seemingly, centred on the notion that most people are cisgender and also because of its description of the genesis of humanity. The hadith literature, however, helps to understand that parents, as well as society at large, might on the rare occasion, assign the wrong gender to an individual at birth assumed from the biological features of a newborn. The fuqaha, therefore, have always been mindful of such erroneous gender assignments. For the social purpose of establishing civil laws, assigning sex to a newborn is necessary.

However, there has always been wide recognition in Shariah law of the fact that on rare occasions (yet not unknown), assigning sex is not a simple matter. Such matters are discussed in the sub-fiqh category known as *nawazil*, which addresses novel and contemporary issues. Statistically, 1 in 12,500 persons is born with such conditions [6]. As such, temporary gender would be assigned at birth but signs of sexual development would need to be monitored until even after puberty for the person to be able to identify their gender.During this interim period, linguists, physicians and the fuqaha referred to persons with such biological variations by the socially constructed category of *'khuntha'* [7],which in modern terminology is best understood as *'intersex'*.

The Arabic construct is derived from the infinitive *'khanth'* which is used to describe the act of turning the mouth of a water skin inside-out or vice versa realised as in the sentence *'khanatha fam al-siqa'* [8]. The nominalisation of this verb to refer to an intersex person euphemistically is understood metaphorically by the fact that a person appears to be or senses internal conflict about their gender and sex. The NHS describes the "sense of unease that a person may have because of a mismatch between their biological sex and their gender identity" to define gender dysphoria (GD). An alternative Arabic etymological explanation of the construct is that it derives from the same root letters to mean '*softness, gentleness, and tenderness'*, which are characteristics to typically describe the softness of the voice of an intersex person [9]. An important distinction to make is that *shu'ur* is a strong natural feeling of 'being' and is dissimilar to a mere wish or a desire of 'wanting to be' (*tamanna*). GD is established by *shu'ur* and not *tamanna*. For example, *shu'ur* in children could be manifested through severe anxiety, depression, and signs of withdrawal whereas *tamanna* could be expressed through role-playing. Nevertheless, the diagnosis of GD is to be determined by expert gender psychologists. The media has played a role in portraying the notion that an average of 50 children a week are 'referred to' or that they 'visit' gender identity clinics in the UK. However, gender psychologists have 'diagnosed' a much smaller number. Moreover, around 75% of children with GD are likely to overcome it after puberty [10].

Importantly, a khuntha must not be confused with a 'mukhannath', 'mutarajjila', or a 'khasees'. Mukhannath refers to a cismale, who does not identify as a female but deliberately dresses as one only for different personal and social reasons [9]. Likewise, a female who does not identify as male but like the mukhannath actively resembles males in clothing and speech is described in Arabic as a 'mutarajjila' [11][12]. Alternatively, a 'mukhannath' and a 'mutarajjila' are also described as *'mutashabbiheen'* i.e. not naturally belonging to the gender but imitating the opposite gender.A castrated male is referred to as a *'khasees'* [13][14].A khuntha, to clarify, is a person who explicitly self-identifies with a different gender than labelled at birth and not someone who merely wishes that they were born a different gender. Sheikh Rashid al-Olaimi of Kuwait stated that 'to taunt persons with gender dysphoria as people imitating another gender is a serious sin that could warrant the displeasure of Allah; because the intersex person did not frivolously bring such matters on themselves; rather it was decreed by Allah in His wisdom' [15].

Regarding the binary notion of gender in the Qur'an, al-Zamakhshari (d. 1144 CE) believed that the *'haqiqa'* meaning the true gender of each individual is clear to Allah the All-Knowing. The Qur'an states that only Allah alone knows the true nature of that which develops inside the womb [16]. However, al-Zamakhshari adds that the determination of gender (*tahdid al-jince*) is *'mushkil indana'* meaning we as humans are not always able to distinguish the gender of other human beings and sometimes, a person their own gender [17]. Al-Sarakhsi (d. 1090) also observed that sometimes a person appears to be neither male nor female (*androgynous, non-binary*) [18]. Alternatively, Imam al-Qurtubi proposed that only males and females are specified in the Qur'an because all are aware of this binary model, whereas the mention of khuntha might have led those who never came across their existence to consider the Qur'an to be mythical. Following this commentary, al-Qurtubi mentioned one of his intersex colleagues from Rabat who was known by the patronym of Abu Saeed. This person had no beard, had women-like breasts, and even had a maid. Al-Qurtubi confessed regretting never having asked the person about their gender out of shyness but wished he had [19]. Ibn Abi Hatim (d. 938), in his work on the biography of hadith narrators also mentioned an intersex teacher of Ahmad bin Uthman al-Awadi by the name of Hasan al-Talhi and described the narrator as having women-like breasts [20]. Al-Sakhawi (d. 1497) mentioned in the biography of al-Sharaf Musa bin Ahmad al-Subki, the famous 14th-century Shafi'i scholar that he never grew facial hair and that he was discovered to be intersex only during his funerary rites [21].

In any case, the sunnah of Muhammad Rasulullah (Peace be upon him, henceforth *Rasulullah, PBUH*) was that every person must be addressed and respected according to the way a person self-identifies; this could be realised in the English language through the use of their proper names, honorifications, and pronouns. On the other hand, using dated terms and slurs or making derogatory, pejorative, or stigmatising statements about intersex persons is forbidden in Shariah law and would be considered a violation of *huquq al-ibad* i.e. the rights of God's creation because of the negative connotations words can carry and the impact they have on intersex persons and their families [22][23][24].

Classical Muslim jurists are praised by Risper-Chaim for seeking "innovative ways" to allow intersex persons to "participate in the community" [25]. El Fadl pointed out that in the Qur'an, the existence of diversity is to be viewed as a "primary purpose of creation" but has "remained underdeveloped in Islamic theology" [26].

Assigning sex to a newborn

From an Islamic jurisprudential perspective, a newborn needs to be assigned sex immediately primarily for inheritance purposes should the newborn or an individual in the family die unexpectedly. Sex also needs to be assigned for naming, upbringing, clothing, and socialisation purposes. However, the gender of an intersex newborn would remain unknown until the child identified their gender by *'iqrar'*. In most cases, parents or guardians hope that they have assigned the correct sex and that their child's gender identity would be congruent with their body image. Importantly, Shariah law recognises that gender is clearer after puberty as a result of advanced sexual development. Assigning sex and identifying gender as a two-step process was also pointed out by classical Muslim jurists and recorded linguistically in their works as a) assigning sex to a *'mawlood'* meaning a newborn as the first step and b) reviewing sex and gender *'idha balagh'* meaning when the intersex person reaches puberty. Hasan Ibn Ali was once asked about a person whose gender could not be determined, he advised to defer the matter until puberty to see further signs of sexual development including menstruation [27].

1- Assigning sex to a newborn

Traditionally in most cases, sex was assigned simply by observing the external genitalia of the baby. If the newborn had a penis, the sex assigned was male and if a vulva, then female. A person whose internal sense of gender corresponds with the sex the person had or was perceived as having at birth is described as *cisgender*. Chromosomal combinations were not possible for consideration and even if they are considered today, a baby born with an XY combination could still have female genitalia. Considering chromosomal combinations or hormones to assign a sex or gender remains a matter of debate in Shariah law [28]. Al-Jammas reported that "at least 50 "full men" were discovered until 1993 whose chromosomal structure was XX" [29].

In complex intersex cases, a newborn could have both male and female genitalia. Muslim physicians and fuqaha

would categorise such intersex newborns as *'khuntha wadhih'* translated in modern terms as *'clearly intersex'*. An inheritance case of one such intersex *'mawlood'* was presented to Ali Ibn Abi Talib who was highly praised by Rasulullah (PBUH) for acting with resolve [30]. Ali advised that if the baby's urethra is located in the penis then the child is to be considered male and if in the vulva then female [31]. There is no further information about that child's sexual development or gender identity after puberty. From this case, we can learn that one way to assign the sex of a child before puberty is through *'experimental'* methods such as urodynamic testing [25].

More complex cases involve an intersex newborn with external male genitalia as well as internal female glands. For instance, with respect to a *'true gonadal intersex'*, the person has both ovarian and testicular tissue. Other possibilities involve having them in the same gonad (ovotestis) or a person might have one ovary and one testis. Another possibility is to have external genitalia of males and females. With respect to 46, XY intersex individuals, the person has the XY chromosomes but the external genitalia are incompletely formed, ambiguous, or female whereas internally, the testes might be normal, malformed, or absent. By contrast, with respect to 46, XX intersex, the person has the XX chromosomes and ovaries, a uterus and fallopian tubes but has the external genitalia appear to be like those of males. In such cases, the labia are likely to be fused and the clitoris is enlarged making it form like a penis; most often caused when the female fetus has had exposure to excess male hormones before birth [32]. In fiqh terms, a true gonadal intersex,46, XY intersex, and 46, XX intersex can be categorised as *'khuntha mushkil'* meaning an intersex person whose gender is indistinguishable. For further details on the pathophysiology of disorders of sexual development, read Mehmood and Rentea [33].

2- Monitoring of gender from age seven until puberty

During this period, monitoring gender identity and sexual development are crucial for social and religious reasons. Intersex children are encouraged, like all children, to perform salah and attend the masajid from the age of seven onward. Requirements for participating in worship differ for males and females. Perhaps, this sunnah is beneficial because it offers intersex children exposure to society and social gatherings to be able to establish their own gender identity by way of *'iqrar'* developed from their actions, mannerisms, and inclinations. On this note, West and Zimmerman, state that "a person's gender is not simply an aspect of what one is, but, more fundamentally, it is something that one does, and does recurrently, in interaction with others" [34]. Al-Isnawi (d. 1370) argued that gender can be revealed through interaction by conforming to behaviours and demonstrating attributes typical of males and females. A study by Cedars-Senai Medical Centre found that more than 70% of patients who experienced gender dysphoria were around age seven [35].

3- Affirmation of gender after puberty

The gender of a person after puberty is clearer and during this phase, the true gender of the person can be identified. For hajj and umrah purposes, affirming gender at this stage is significant because of the laws related to ihram. Indicators of gender can be categorised into major and minor sexual developments.

Major developments include getting pregnant or giving birth; both of which, according to Hasmady and Shamsuddin unequivocally establish a person as a female in Shariah law [36]. For inheritance purposes, a person who gives birth is given the status of *'mother'*. The reason given for this assignment is that the Qur'an associates pregnancy [37][38] and delivery [39] with 'motherhood'. Likewise, Hasmady and Shamsuddin argue that the ability to impregnate a woman unequivocally establishes a person as malein Shariah law and at birth, he will have the status of *'father'*. Sexual orientation (*maylan*) is another indicator of gender identity if the intersex person identifies as heterosexual [40]. Correspondingly, inclination toward males could help the intersex person establish their identity as female, conversely, inclination toward females could help the person establish their identity as male. In relation to the first ever gender correction surgery case in the Emirates, Consultant Pediatric Surgeon Dr Amin El-Gohary asserts that there exists 'great confusion between the concept of gender identity and homosexuality' i.e. they are fundamentally two separate concepts: gender identity is related to a person's belief about their own gender [15].

Another legal case presented to Ali Ibn Abi Talib involved an intersex person who had both male and female genitalia and was identified as a male despite society perceiving this person as female [41]. This person and their husband had a maid who when she gave birth, both persons claimed the child. Among the factors that Ali considered was the fact that this person was sexually attracted to women and even impregnated one. Interestingly, when inspection of the genitalia of the intersex person was necessary, Ali would respectfully

take two important measures a) that only a *khasee* was authorised to do so, perhaps due to the absence of other intersex persons and b) that the inspection was carried out via a mirror reflection.

Minor developments that could help one to identify their gender include beard or chest hair growth for males and growth of breasts for females. Hair type and vocal attributes could also help to realise gender among other anatomical features of the body. As for menstruation, al-Isnawi suggested that only if it occurs more than three times and is regular can it be considered a female characteristic [42].

As for exactly who decides on the gender is a matter that needs further discussion. In the above-mentioned cases such as the Ansari newborn and the intersex person who identified as male, different people were involved in the assignment process for different reasons. In the Ansari case, the baby can be considered too young to have established a gender identity and Ali's assistance was sought. In the second case, the intersex person was married to a male and had impregnated their maid. A dispute arose as to who the father of the child was i.e. was it the intersex person or the husband? As this case had become a legal matter, Ali's involvement was required. However, aside from such court cases, al-Kharaqi (d. 946 CE) asserted that if an intersex person self-identifies as male then the person is male and if as female then female. Al-Zarkashi (d.1392 CE) supported al-Kharaqi's approach adding that the intersex person is the only person who can reveal their gender and their gender identity must be respected and accepted just as when a female states that she is menstruating [43]. Al-Sarakhsi (d.1090) also reiterated the point that in all internal psychological and biological matters, the word of the person - to whom the matter applies - is *'shar'an maqbool'* meaning valid in Shariah law [44].

Some Shia scholars, proferred another category whereby they classified some intersex persons as having *'al-tabi'a al-thalitha'* literally meaning the third gender [45][46][47][48]. Zain al-Din al-Juba'I al-Amili (d. 1558) argued that there is no evidence in the Qur'an that a third gender could not exist [49]. Alternatively, Al-Haydari [50] concedes that intersex persons, especially those whose gender is indistinguishable, are beyond our social constructs in light of the verse 'and He (Allah) creates that which is unknown to you' [51]. Accordingly, and in light of al-Zamakhshari's view, intersex persons pose a challenge to society only because society struggles to situate them according to its constructs.

In spite of the gender spectrum, fiqh rulings are predicated on a binary model which implies that Sharia law has no exclusive jurisprudential model for intersex persons, although flexibility is provided. The fuqaha, therefore, advised that intersex persons choose either fiqh whilst maintaining their gender identity. On that note, the fiqh depends on the gender of the person and not vice versa. In hajj, for example, males are to uncover their heads and avoid wearing knitted clothes. Females, on the other hand, cover their hair and can wear knitted clothes. Now, simply because these rulings are predicated on a gender-binary model does not necessitate that every individual neatly fits into the binary gender model.

Moreover, simply because one chooses to uncover their hair does not make a person male. Rather, the fiqh follows gender and so if a person identifies as male then they are required to uncover the head and if as female, then to cover. If intersex, then as Ibn Qudama (d. 1223) suggests, the matter remains flexible as long as the rulings do not conflict. For example, an intersex person could choose either option but is advised to avoid an approach that would result in what would be a violation of rules for both genders simultaneously; for instance, if an intersex person wore knitted clothes but at the same time exposed their hair [52]. Another such scenario applies to wearing gold and silk, which are permitted for females but not males. Al-Sarakhsi recommended that perhaps, the best choice for an intersex gender-seeking person is to avoid wearing them to conform to the hadith 'leave that which causes doubt for that which does not cause doubt' [44].

For children, the rationale for prescribing puberty blockers is to 'pause' and 'buy time' to make decisions. However, the treatment has been considered experimental with unknown long-term effects. Puberty blockers are said to rewire neural circuits and affect brain maturity and neurocognitive development, temporarily or permanently, which could disrupt the decision-making process and consequently, have the opposite effect to the one claimed [53].

Two main types of gender-related surgeries

Another aspect related to intersex persons involves examining the case of individuals who have established their gender and have self-identified as either male or female. If an intersex person is satisfied with their physical characteristics then they need not be pressured into any form of treatment that would alter these characteristics. Intersex persons need not necessarily

conform to standards of beauty for males and females but embrace beauty as viewed by intersex persons. Malim and Padela highlight that:

> It may be appropriate for an individual to carry on in life without fitting into a gender binary as male or female, and society should accommodate for this gender ambiguous position as something that is normal, even if not very commonly seen, as discussed in Kitab al Khuntha. This idea may not be easily fit into all societies, including Muslim ones where a strict gender binary is deemed normative, but nonetheless Islamic texts presuppose the notion [3].

If on the other hand, the intersex person wishes to undergo 'corrective surgery' then again there are further considerations for the patient, physicians, and the fuqaha. A salient point to distinguish is that when a cisgender person wishes to change their sex or gender then the procedure is known as 'sex reassignment surgery' (SRS) and in Arabic *'tahweel al-jince'*. When an intersex person, on the other hand, wishes to undergo surgery to 'affirm' their sex and gender; this type of surgery is known as gender-affirming surgery, gender-affirmation surgery, and gender-confirming surgery (GCS) and in Arabic *'tas'heeh al-jince'* or *'tathbeet al-jince'* [54]. Muslim jurists Ibn Hajar al-Asqalani (d. 1449) and al-Qastalani (d. 1517) both encouraged intersex persons to seek gender-correcting treatment [55].

Muslim jurists agree that GAS is permitted only after gender has been determined as either male or female otherwise the procedure would be futile and the genitalia of the patient would be manipulated without justification [2].

Tas'heeh al-jince is not to be conflated with the concept of *'taghyeer khalq Allah'* meaning 'altering the creation of Allah'. The reason for referring to the surgery as 'tas'heeh' and not 'taghyeer' is because the person's true gender does not change but is realised and affirmed. Perhaps, the most controversial case in modern times was that of a male in Egypt by the name of 'Sayyid Abd Allah' who was described by two independent gender psychologists as a 'khuntha al-nafsiyya' meaning psychologically intersex. Sayyad underwent surgery and adopted her new name 'Sally' [55][56].

A difference of opinion remains on whether this procedure was a sex 'change' or 'affirmation'.

Tas'heeh al-jince

Physical characteristics and features that are socially considered desirable in terms of aesthetics and function exclusively in males include the penis along with the glans or the tip, scrotum and testicles, beard and chest hair. By contrast, characteristics and features that are socially considered desirable exclusively in females include a vagina, breasts, uterus, cervix, fallopian tubes, ovaries, and menstruation. Such desirable features for males and females can be termed *'al-udw al-asli al-sahih'* which can be loosely translated as *'correct features'*. Conversely, the same physical characteristics and features that are socially considered desirable exclusively for males are typically by contrast, undesirable for females and vice versa. Consequently, these undesired features can be termed *'al-udw bi-manzilat al-ayb'* which can be loosely translated as *'conflicting features'*.

The questions or the dilemma that arise for intersex patients, physicians, and the fuqaha include a) if the correct features have defects in any way, shape, or form then from an Islamic perspective, can they be *'surgically corrected'*? and b) from an Islamic perspective, can conflicting features be surgically modified? The answer to these questions has implications for a range of surgical procedures including but not limited to:

- *Correcting male features*: metoidioplasty or phalloplasty, erectile implants, glans penis correction, growing beard and chest hair, scrotoplasty, sperm fertility, testicular implants, urethral lengthening
- *Correcting female features*: vaginoplasty, breasts augmentation, clitoroplasty, facial Feminisation, feminising genitoplasty, labiaplasty
- *Correcting conflicting features in males*: vaginectomy, bilateral salpingo-oophorectomy (BSO), chest reconstruction, gynaecomastia, hysterectomy, mastectomy
- *Correcting conflicting features in females*: vasectomy, chondrolaryngoplasty, gonadectomy, orchiectomy, penectomy, tracheal shave

Fatawa in favour of tas'heeh al-jince

Two major medical cases in recent decades related to intersex persons led to two impactful fatwas from two prominent jurists of their time. The first case was in Iran, in which Fereydoon Mulkara, who was socially perceived as a male, later identified as Maryam Khatoon Mulkara (1950-2012) [57][58][59]. The second case was

in Egypt, where Sayyad Abd Allah, another socially perceived male, underwent surgery which became an ethico-legal matter in court. The first case was approved via a fatwa by Ruhullah Khomeini which appears to have also influenced the outcome of the second case approved by the then Grand Mufti of Egypt, Sayyad al-Tantawi [55][56].

Khomeini issued two fatwas related to sex-reassignment surgery. The first was in 1964, wherein he stated that for an intersex person, although permitted, gender affirmation surgery was not obligatory. Maryam, during this period, whilst still having male genitalia wore women's clothing and was permitted to marry and even married twice. After the 1979 revolution, Maryam faced persecution and was *'harassed, even jailed and tortured'* [60]. In 1981, the Malaysian Center for Islamic Research reached out to the then Grand Mufti of al-Azhar, Jadd al-Haqq Ali Jadd al-Haqq regarding sex-change operations [61]. His fatwa not only permitted the surgery but also encouraged it provided that it would have a high probability of success. Returning to Maryam's case in Iran, she eventually met with Khomeini in person circa 1987 to discuss her situation. Khomeini consulted three of his trusted doctors to review the case and concluded that surgery was a valid option from an Islamic perspective. In his revised fatwa, Khomeini recommended that reliable medical doctors must be consulted when considering reassignment surgery. Alipour presumes that the reason for the consultation was that the surgery would be irreversible with lifelong consequences [56]. Maryam underwent the surgical operation in 1997 and then established *Himayat az bimaran-i mub-tala bah ikhtilal-i huviyat-i jinsi Iran* (the Iranian Society to Support Individuals with Gender Identity Disorder, ISIGID)in 2007.

A year after Khomeini's fatwa, in 1988, Sayyad al-Tantawi was faced with the case of Sayyad Abd Allah, a student at al-Azhar. In his fatwa, al-Tantawi reiterated Jadd al-Haqq's fatwa but with additional points. Al-Tantawi acknowledged that some persons might not show any physical signs of intersex (*khuntha khalqi*), however, they might still strongly sense that their body is not congruent with their body image (*Khuntha nafsiyya*). Like Khomeini, al-Tantawi left the matter with expert physicians to investigate two types of conditions a) *matmura*, where a female's nature is concealed and b) *maghmura*, where a male's nature is concealed. Al-Tantawi's metaphor thereby advocated for *'uncovering'* one's true gender.

Implications of the fatwas

The reaction of two influential jurists to the cases of Maryam and Sally has since sparked interest and discussion among medical experts and the fuqaha. With regard to the nature of tas'heeh al-jince, the Islamic Fiqh Council of the Muslim World League concluded in their resolution at Mecca in 1989 that the surgery is permitted and should be understood that the purpose is clinical to reveal the true condition of the person and not *'taghyeer khalq Allah'* meaning to tamper with the creation of Allah [62].

The Permanent Scientific Committee for Research and Ifta (*Al-Lajna al-Da'ima lilBuhuth al-'Ilmiyya wal-Ifta*) in Saudi reiterated the same fatwa in 1990 [63]. The opinion of the General Secretariat of the Council of Senior Scholars, specified in their 39th session held at Ta'if that treatment is permitted by hormone therapy as well as surgery [64]. Another fatwa from Egypt stated the legality of performing gonadectomies or hysterectomies for intersex persons [65]. In 2006, the Fatwa Committee National Council of Islamic Religious Affairs Malaysia also permitted the surgery adding that gonadectomy to prevent malignancy is also permitted [65]. A point on fertility matters was also added wherein the fatwa stated that the egg or sperm must come from the intersex person themselves [67].

In terms of the impact of the fatwas on medical practice, GAS has increased in Iran and Saudi Arabia. In 2015, Dr Mirjalali, Iran's leading surgeon, stated that whereas "In Europe, a surgeon would do about 40 sex change operations in a decade", he had conducted 320 over a period of 12 years in Iran [68]. Similarly, Prof. Yasir Salih Jamal highlighted the value of the fatwas stating that GAS is carried out in the university hospital according to the fatwas of religious references in Saudi Arabia [69]. He also added that he had witnessed over the last two decades, a major shift in treatment, diagnostically and therapeutically, with the advancement of genetic hormonal analysis and types of medical imaging, sonogram, tomography, magnetic, endoscopy, and diagnostic tissue study. Like Mirjalali, Jamal pointed out that he too over a period of 25 years had conducted more than 300 operations for males and females.

The most striking experience for Jamal was performing GAS on five sisters ranging between the ages of 38 and 17, who now live as five brothers. Another case that Jamal described as memorable was an intersex person by the name of Fatima who came for hajj, underwent

surgery and returned as Muhammad. 15 years later, this person also had an intersex child, and because of early diagnosis after birth, the surgery was better than the father's.

In 2017, Pakistan's census recorded approximately 100,000 transgender people. To accommodate those who identify as Muslims, Pakistan saw its first madrasa to integrate intersex Muslims [70]. Likewise, through a private initiative, the first madrasa for intersex Muslims was opened in Dhaka, Bangladesh [71]. In 2008, after the Indonesia earthquake, which had a magnitude of 6.3 and which caused 4,000 deaths, a madrasa was founded for intersex persons. The director of the madrasa, Shintra Ratri stated that "It was a time of suffering … and we needed a place to worship together and learn about Islam" [72].

Returning to the resolve of Ali ibn Abi Talib, he not only legally established and accepted the gender of the person but went a step further and celebrated the notion by establishing a gesture as a rite of passage. After Ali concluded the case that the person was to be respected as a male, he offered the person male clothing. In Maryam's case, we see the same gesture when the then president and second Supreme Leader after Khomeini at the time, Khamenei, gifted her with a chador. Moreover, Maryam was provided with a new birth certificate, a new identity card, a new passport, and even a loan from the government. Likewise, Prof. Jamal described that the five brothers were given 30,000 Saudi Riyals as a donation from the royal family plus two years' worth of rent covered financially.

Ethical considerations

Having discussed the views and opinions of Muslim jurists, the final decision of undertaking GAS lies with the intersex person. Because the outcome would be irreversible with lifelong consequences, the decision must be wellinformed. Rasulullah (PBUH) advised that a person who seeks a positive outcome from Allah (*istikhara*) and heeds the advice of others (*mashwara*) is less likely to regret their decision. He also strongly advised that those whose advice is consulted are accountable to Allah if misleading or misinformed advice is given. On that note, faith leaders need to understand the science related to gender, be up to date with the latest terms and developments in gender studies and surgery as well as be aware of the benefits and risks. In the context of GAS, an intersex person is advised to consult loved ones, the fuqaha, and medical experts inclusive of gender psychologists. Should a representative from these groups be absent, all effort must be spent to invite them as each group has a vital role to play and to make the decision-making process holistic.

Firstly, only the intersex person can truly reveal their gender whilst others can only assist them to realise what that gender is. The intersex person must be aware that choosing surgery is only an option and not obligatory according to Shariah law. No pressure, therefore, must be felt to undergo any surgery. Any decisions being made related to treatment need to be weighed considering the emotional and mental vulnerability of the intersex person. As per the advice of classical fuqaha, an intersex person who is *gender questioning* should be allowed exposure to both genders so that the decision is based on *shu'ur* that would be developed from lived experience among both genders and to avoid shock or trauma post-surgery. The intersex person must also be aware of the social norms, customs, and traditions in their milieux, which are in most cases, rooted in the gender binary model. At birth, only sex is assigned to the newborn, however, gender can only be truly realised as the child begins to form an identity that is realised through behaviour, a strong sense of gender, and sexual development. During the Khilafah period, we find the existence of intersex persons who were embraced.

As seen in the cases of Maryam and Sally, gender psychologists have a key role to play in assisting intersex persons to realise their true gender. The role also includes post-surgical psychological care to help individuals adapt to their gender roles. As with any medical treatment, Shariah law encourages avoiding any medication in the first instance and encourages patients to allow nature to take its course. Concerning gender, intersex persons should not have to feel obliged to undertake surgery because they are facing discrimination from family members or the wider society. Should this be the case, then the fuqaha are responsible for addressing such vices (*nahy an al-munkar*) and for reiterating the rights of people (*huquq al-ibad*). Accordingly, gender marginalisation, subordination, stereotyping, and violence against men, women, and intersex persons are all forms of social illnesses that the fuqaha need to address. Moreover, the Qur'an reprimands people who refuse to 'accept the glad tiding of learning that a person is female' [73]. On that note, an intersex person who identifies as female should not be discouraged to identify as such by others simply because of sexist attitudes toward females. Society needs to accept that such persons were erroneously *assigned male at birth* (AMAB). Moreover, society should celebrate and embrace the

moment an intersex person has realised their gender identity as an occasion of 'glad tiding'.

An additional role of the fuqaha involves reminding the intersex person of the different rulings related to ritual purity and worship according to gender and the possible reaction of the intersex person's society according to the way the madhab is socially practised; in terms of effects on an existing marriage if applicable, accommodation in the masajid, travelling with or without a mahram, especially for hajj and umrah purposes, education provisions if segregation is practised, inheritance portions, and offering and being given funerary rites [74]. The fuqaha must also allow the time and space for an intersex person to come to an informed decision but may encourage the person to be mindful of Islamic rulings. The fuqaha are also reminded that Rasulullah (PBUH) stated that a true believer must always be mindful of the welfare of the entire ummah. Irrespective of gender, the fuqaha must echo Qur'anic values which state that all are created equal and by piety alone, one reaches greatness.

If the decision to undergo any correction is a personal choice without any such external social pressure then again, as per Shariah law, the advice would be to take the least invasive options such as hormone therapy. Lastly, if the only option is irreversible invasive surgery, then medical experts need to be very clear about expectations in terms of unguaranteed true sex assignment, physical and psychological health risks [75], the source of skin and tissue for reconstructive surgery, function, sensation, aesthetics, fertility, and recovery. Meyer-Bahlburg also asserts that "The clinician's role is not to superimpose her/his cultural values on those of others, but to come to a decision that likely minimizes potential harm to the patient in his/her cultural environment" [76]. From a fiqh perspective, consent would only be valid if the intersex person has sufficient maturity and capacity to comprehend the consequences of the treatment. Moreover, the consent needs to be well-informed and explicit.

Conclusion

The notion of khuntha is a social construct by classical fuqaha to allow intersex persons to engage and contribute to society and was never intended to marginalise them as being beyond the strict gender binary model. Assignment of sex has traditionally been attested by experimental testing which involves identifying the genitalia of the newborn. Modern approaches can assist sex assignment at chromosomal, gonadal, reproductive, and behavioural levels. The flexible nature of the Sharia legal framework also allows corrections in case of error. Gender, on the other hand, is realised after puberty once a person develops and matures sexually, physically, and psychologically. Muslim jurists have also recognised that orientation does not necessarily match one's sex organs. Tas'heeh al-jince, also known as GAS, is considered to be a *'corrective'* surgery by key Muslim jurists and organisations. Because the treatment is irreversible with lifelong consequences, several ethical issues must be considered collectively by a panel which needs to include the intersex person, their loved ones, gender psychologists, surgeons, and the fuqaha.

Further research is required from an Islamic perspective on the journey of British intersex Muslims and the thoughtprocess of parents. Further research is also necessary concerning the impact of puberty blockers as a safe and viable long-term option for children especially those that present neurodiversity. The intersex fiqh network is proposed to encourage interdisciplinary dialogue between health care professionals and the fuqaha using terms that require familiarisation from both groups.Furthermore, the fuqaha need to revisit the fiqh of intersex Muslims and monitor the social treatment of intersex persons in society and help to create an environment wherein an intersex person is respected as a human being and as a creation of Allah the Most Merciful. Lastly, more statistical information needs to be shared with faith leaders concerning the actual number of GD referrals, confirmed cases, number of referrals for hormone therapy and GAS, and outcomes to help curb fears and avoid exaggerated claims about its commonality.

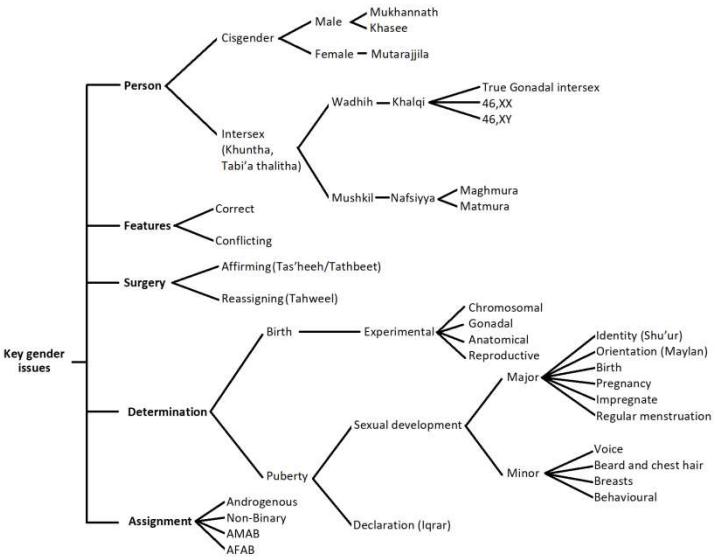

Table 1. Intersex fiqh network

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Journal of the British Islamic Medical Association

Ethics

Vol 11 - No. 4 | August 2022 | www.jbima.com

Global Crisis of Abortion and the Islamic Viewpoint

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Keywords: Abortion, termination of pregnancy, Islam, faith, Sharia, Islamic fiqh

Abstract

Heath professionals face various medical and ethical dilemmas throughout their professional careers. Some of these challenges become more testing when they pose a threat to one's religious teachings and beliefs. During current times when people, in general, are becoming more liberal and distancing themselves away from religious practices, ethical issues are becoming a regular occurrence.

One of these issues is abortion or termination of pregnancy (TOP). Whilst there may be several reasons for TOP, Islamic law and teachings lay clear guidelines about its permissibility and prohibition. Since the recent historic ruling of the US Supreme Court to overturn abortion rights, there have been fresh debates about the permissibility of abortion in the US and Europe among people of faith and no faith.

There are approximately 2 billion Muslims in the world, a quarter of the world population. It is, therefore, vitally important for Muslim health professionals to have a clear understanding of abortion in the context of Islam and sharia laws. This article summarises abortion from an Islamic perspective.

Introduction

In layman's terms, abortion is referred to as a procedure to end a pregnancy. In other words, abortion is induced as opposed to miscarriage which is a spontaneous process. Abortion is also called termination of pregnancy (TOP). Throughout this article, both of these terms would be used interchangeably. According to Harvard medical school, "Abortion is the removal of pregnancy tissue, products of conception or the foetus and placenta (afterbirth) from the uterus".[1] In medical terms, abortion is a process of ending a pregnancy before the age of viability.

It is worth noting that historically the age of viability has been changing with time. However, due to the advancement in medical care, there is a consensus that a foetus is capable of surviving outside the mother's womb at 24 weeks of gestation [2].

Abortion has a huge social, moral, ethical, financial and physical burden worldwide. According to the world health organisation (WHO), a staggering number of 73 million induced abortions take place globally each year and nearly two-thirds (48 million) of these are due to unintended pregnancies. [3]

According to the US Pew research centre, the centre for disease control and prevention (CDC) and the Guttmacher institute compile figures for abortion in the US on annual basis. According to CDC, six hundred thousand abortions were carried out in 2019 whilst as per Guttmacher's statistics this figure was nearly one million in 2020.

The majority of the women who had an abortion were young, 57 % being in their 20's. Worryingly nearly 10 % were teenagers aged between 13 and 19 years.The vast majority of women who had an abortion were not

married. Over 93 % of these abortions occurred within the first 13 weeks of pregnancy whilst 6 % took place between 13 and 20 weeks of gestation. [4] According to CDC data in 2008, 75 % of pregnancies were unintended among teenagers between 15-19 years.[5]

Similar figures are reported in the national statistics of the UK government. A quarter million abortions took place in the year 2021 in the UK. The rates had been highest in young women between 20 and 30 years of age group. 82% of these women had been unmarried. 98% of these abortions were carried out under the assumption that these women had a significant risk to their physical or mental health should the pregnancy be allowed to progress. In almost all (99.9%) of these cases risk of mental health was recorded as the underlying reason for terminating the pregnancy. There was no evidence of physical harm or threat to maternal life in any of these cases.[6] These figures have not mentioned foetal anomaly as a cause of abortion.

These findings correlate with the research studies about mental health problems in unmarried women undergoing the abortion. Evidence has consistently demonstrated a higher incidence of mental health issues such as anxiety, low mood, depression and high perception of stigma and discrimination in these cases [7][8][9]

Islamic perspective about abortion:

To better understand the Islamic perspective on abortion, it is important to highlight the concept of abortion according to other faiths. All major religions strictly value the sanctity of life and consider it highly precious. Although the teachings of these faiths generally oppose abortion except for a few exceptions, none of these has provided an in-depth analysis of this very important issue. Islam on the other hand discusses abortion in great detail focussing on its prohibition, permissibility, guiding principles, logical reasons and underlying philosophy behind its laws.

According to the Christian faith, "you shall not murder" and any deliberate act of taking a human life breaks the sixth commandment. According to the Catholic Church abortion is not permitted in any circumstances, however, it is not considered unlawful if it occurs whilst saving a pregnant women's life.[10]

In the Jewish faith, abortion is forbidden except when the life of the mother is at risk.[11]

Sikhism, Hinduism and Buddhism adopt a pro-life approach and condemn abortion. Hinduism allows abortion when it is necessary to save the life of the mother.[12]

In Islam, guidance on any matter, be it personal or communal, is sought from the "Sharia law" (divine law derived from the Holy Quran and Hadith) and "Fiqh" (human scholarly interpretations of Islamic teachings). The Holy Quran is the last and final message from God ("Allah" in Arabic) to mankind. Hadith refers to teachings, sayings and practices of God's last and final messenger, Prophet Muhammad, peace be upon him (PBUH).

The Holy Quran describes the creation of a human being in the mother's womb in great detail in many chapters. It mentions the stages beginning from a "nutfah" (a drop of fluid) to the definitive human form. These verses translate as "We (Allah) created man from a quintessence of clay. We then placed him as a *nutfah* (drop) in a place of settlement, firmly fixed, then We made the drop into an *alaqah (leech-like structure),* and then We changed the alaqah into a *mudghah (chewed-like substance),* then We made out of that mudghah, *izam (skeleton, bones),* then We clothed the bones with *Lahm (muscles, flesh,* then We caused him to grow and come in being and attain the definitive (*human)* form. So, blessed be God, the best to create. [13].

"Nutfah" refers to the stage from conception to 40 days after the ovum has been fertilised. From 40 to 80 days, it is termed as "Alaqah" (blood clot); when the fertilised ovum looks like a blood clot. "Mudgha" is the name given to an embryo which is a stage between 80-120 days. The final stage is described as "khalaqanakhar" which refers to the definite human form. This happens after 120 days of conception (i;e 4 months) when the soul enters the body. It is at this stage that the embryo acquires a more human form, with almost all the vital organs differentiated and functioning effectively [14]. This stage is very important as it makes the basis of various Islamic rulings on abortion. This is discussed in the coming paragraphs. All of these stages of human development have been confirmed by modern-day embryologists who are amazed by the accuracy of such details described more than 1500 years ago.

No other religion has emphasised the sanctity of life as highly than Islam. There are numerous verses in the Holy Quran and sayings of Prophet Muhammad (PBUH) describing how precious life in the eyes of its creator (God) is. It not only condemns the killing of an innocent

soul, but it classes it as a major sin and prescribes the harshest of punishments for the perpetrator. *"if anyone slew a person – unless it is for murder or for spreading mischief in the land – it would be as if he slew the whole people: and if any one saved a life, it would be as if he saved the life of the whole people."[15]*

Before Islam, it was a common practice among Arab pagans society to kill their female children out of perceived shame, honour and poverty. Islam strictly forbade such practices as mentioned in the Holy Quran; "Do not kill your children for fear of poverty. We provide sustenance to them and to you, too. Killing them is a great sin indeed.[16]

It is reported in Hadeeth of Prophet Muhammad (PBUH) that "*Ibn Massoud (a companion of the Prophet) asked the Prophet: What is the gravest sin? The Prophet (PBUH) answered: "That you associate partners with God who created you." Ibn Massoud asked: What is next to this? And the Prophet answered "That you kill your offspring for fear of them sharing your food with you"*[17][18]

In the light of above mentioned quranic verses and prophetic sayings, Islamic scholars of all schools of thought of past and current eras agree that abortion is strictly forbidden after 4 months (120 days) of conception, i.e. age of ensoulment. This is because it is considered as killing a soul which Allah has forbidden.

Before the age of ensoulment, abortion is permissible only in certain extreme circumstances such as the threat to women's life, significant foetal deformity and in case of victims of rape.[19]Imam Ghazali,a famous Muslim scholar, in his book ***Iḥyā'*** 'Ulūm al-Dīn, described the act of abortion as haram (forbidden) in all stages of pregnancy except the life of the mother is threatened. In 1940, the grand imam of Al-Azhar said that abortion after 120 days of conception is prohibited and he considered it a crime against a human being.

In the cases where abortion is permissible, there is a difference of opinion about its timing. The Hanafi schools of thought allow it up to 120 days whilst the majority of Shaffi, Maliki and Hanbali allows it only up to 40 days after conception.[20] Regardless of the school of thought, almost all Islamic scholars believe that so-called elective abortions or abortions of convenience are not allowed in Islam.[21]

According to The Standing Committee for Scientific Research and for Issuing Edicts, Preaching and Guidance (SC) in Saudi Arabia, when abortion is recommended based on risk to the mother's life or significant foetal anomaly, this recommendation must be made by a board of at least three experts in this field based on their expert professional judgment. [22]

The Egyptian fatwa institution (*(Dar-al Ifta Misriyyah)* states that the only acceptable reason for abortion is if the pregnancy would threaten the mother's health and life advised by a competent Muslim physician. [23]

In 2010, The Fatwa Committee of the National Council for Muslim Affairs of Malaysia discussed the issue of abortion. It discouraged abortion if it did not cause any harm to the mother. The committee also concluded that abortion may be allowed before 120 days of gestation if the foetus was deformed and posed a threat to the mother. Abortion during or after 120 days was not allowed except that it was carried out to save the life of the mother due to a significant threat to her life.[24]

Summary and Conclusion:

As a general rule, abortion is forbidden in Islam. The sanctity of life has been mentioned in numerous verses in the Holy Quran as well as the sayings of Prophet Muhammad (PBUH). The exception to this rule is when there is a risk of potential harm to the mother's life. There is a mutual agreement among scholars and jurists that abortion is *haram* except for a few extreme circumstances.

There are, however, differences of opinion about aborting a foetus which is less than 120 days. Some jurists have ruled this impermissible. The *Hanafi* and the *Shafi school of thought* have ruled it permissible only if there is a genuine reason. This difference arises from the debate based on when the soul enters the foetus. Some of the jurists have mentioned 40 days whilst others have argued that ensoulment of the foetus occurs at 120 days based on different evidence.

Regardless of these differences, all scholars have agreed that there must be a valid reason for abortion to take place irrespective of the stage of pregnancy. This would be when an expert health professional determines that if the foetus was to remain in the womb, then this would pose a danger to the mother's life. In such cases, it would be allowed to abort the foetus to protect the mother's life as she is the actual source of life. The foetus exists due to the mother, so protecting her life and health becomes the priority.

Abortion is only allowed when there is a serious risk of harm to the mother due to the reasons mentioned. It is the responsibility of an expert medical professional to confirm whether the continuation of the pregnancy would be harmful to the mother or not as the fundamental aim of Sharia is the safeguarding and protection of life.

Conflict of interests: None

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Journal of the British Islamic Medical Association

Ethics

Vol 11 - No. 4 | August 2022 | www.jbima.com

The slippery slope of criminalising abortion: perspectives of a female Muslim family physician

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Keywords: *abortion, criminalisation, Islam, bioethics*

The recent decision by the US Supreme Court to overturn Roe v. Wade and allow states to ban abortion is a grave and dangerous violation of human rights. It puts the health and wellbeing of women and girls at risk, undermines choice and agency, criminalises bodily autonomy and medical care, and opens the door to discrimination, abuse and disparities.

Whatever my conscientious and religious position may be on abortion, it is not my right, or anyone else's right, to deprive another woman or girl her right to be free from violence, to privacy, family and health, and her right to bodily autonomy and make choices about her care and what matters most to her. The ban on abortion creates a slippery slope with far-reaching consequences for wider sexual and reproductive rights including access to antenatal care, safe childbirth and contraception.

The ban will feed into structural discrimination and racism and further increase disparities in sexual and reproductive health for marginalised women, such as those with disabilities and those from refugee and migrant, low income, indigenous, ethnic and faith backgrounds. In some states, a 6-week limit or ban at viability is being introduced (1), but late antenatal presentation is well recognised among marginalised groups such as Black women (2) and the ban would therefore have a disproportionate impact and discriminate against these groups.

Criminalisation may deter women and girls from accessing essential contraceptive and sexual health advice and from seeking critical post-abortion care for complications from unsafe abortion practices which are commonly seen (3). It may also push women and girls into social and economic exclusion and hardship and could force them to stay in or enter exploitative and abusive relationships, creating a vicious cycle of disempowerment, disadvantage and disparities.

Criminalising abortion can have a "chilling effect" on medical professionals who may experience penalties of up to 10 years imprisonment (4), may not understand legal boundaries or mis-apply restrictions in a narrower or discriminatory way, especially against marginalised women and girls. Working as family doctor in the UK in a deprived and ethnically diverse population with a large Muslim community, I am frequently consulted by Muslim women and girls who request to have an abortion; women and girls who are victims of marital rape and sexual violence, women and girls whose health, or the health of their baby, is at risk due to continuing pregnancy, women and girls experiencing social and financial hardship, control and abuse, and women and girls who have experienced contraceptive failure or face barriers accessing contraception counselling or sex education in the first place because of the taboos surrounding these issues. The reasons are many, but it is not for me to judge or deprive them of their rights to a safe and legal abortion, and it is not the right of the government to criminalise shared decision making and personalised care that is aligned with good medical practice and professional values and ethical responsibilities.

As healthcare professionals, we must also consider the serious consequences of criminalisation on health and survival. Regardless of whether abortion is legal or not, women who need to get an abortion will get one. Between 25-50% of pregnancies end in abortion every year (5) and criminalisation does not stop abortions, it only makes them less safe, and that too with fatal

outcomes. The World Health Organisation estimates that 25 million unsafe abortions take place each year (6), due to procedures "carried out either by persons lacking the necessary skills or in an environment that does not conform to minimal medical standards, or both" (7). Unsafe abortion is strongly linked with a range preventable maternal complications including sepsis, trauma and haemorrhage and is the fourth leading cause of maternal deaths worldwide (8) and an additional five million disabilities (9).

Recognising the risks of restrictive legislation around abortion, more than 50 countries in the past 25 years have changed their laws to increase access to safe and legal abortion, including Muslim majority countries. The US ban, in addition to being deeply patriarchal, is rooted in monopolised Christian theocracy that has been condemned by faith leaders for violating religious liberty (10). It has also had the bizarre effect of increasing Islamophobia and colonial racist views of the Muslim world (11). Many have labelled the ruling as "Sharia", comparing regression of women's rights in the US as morally and socially equivalent to the normative state of women's rights in the Muslim world, where ironically, the majority of countries have laws that allow termination of pregnancy.

Unsafe abortion has been called the "silent" and "preventable" pandemic (12). Access to safe and legal abortion is a basic public health and human right for all women and girls and it is clear that criminalising this would have a plethora of devastating health, social, economic and legal consequences, disproportionately impacting marginalised and destitute groups, and increasing discrimination and disparities. All healthcare professionals, regardless of gender, creed, colour or political affiliation, must fight for this basic right.

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Journal of the British Islamic Medical Association

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Vol 11 - No. 4 | August 2022 | www.jbima.com

The use of porcine bioprosthetic valves: an Islamic perspective and a bio-ethical discussion

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Keywords: Aortic valve replacement, Porcine, porcine valves, Bovine, informed consent, Islamic law, Bioethics

Abstract

Valvular heart disease is a common condition. Mechanical and bioprosthetic valves are used to replace the valve when repair is not possible. In addition to the bovine source, bioprosthetic valves can also be made from porcine tissues.Therefore, replacement can pose challenges to the Muslim patient and the clinician aiming to reach an informed consent.Here we demonstrate theIslamic ruling on the use of porcine-derived heart valves and also we explore the available non-porcine options for Muslim patients. In Islam, the permissibility of porcine bioprosthetic heart valves involves two important concepts. The need for this particular treatment and the absence of an alternative option. In general, each patient's scenario must be assessed individually, associated harms identified and weighed up by the patient and family in consult with the treating physician to reach an informed consent particularly if the use of porcine tissue is felt unavoidable.

Introduction

Patients religious beliefs have a strong influence on medical decisions and choice of treatment. This is of vital importance when the proposed treatment contains prohibited substances. Receiving such treatment can lead to religious distress and their provision could be perceived as an insensitive practice. The ingestion of porcine (pig-based) products is strictly prohibited in Islam. Many surgical prosthesis contain animal-derived material that commonly utilizes bovine or porcine products. The use of non-animal based prosthesis may be unavoidable in certain situations. Therefore, it is

necessary for the treating physician to be aware of these issues as this will influence the consenting process.

It is well recognised that involving people in decisions about their health and care improves health and wellbeing. As a result, patients need information regarding benefits, risks and different treatment choices. Little is available in the literature to guide Muslim patients, suffering from valvular heart disease, to choose a treatment that is effective and at the same time fulfils their religious duty. The aim of this article is to provide the Islamic ruling on the use of porcine-derived heart valves and to explore the available non-porcine options for Muslim patients in order to assist physicians in delivering a patient-centred care taking into account patient-reported outcome measures and experience as part of the informed choice offered to patients.

The Islamic perspective

The prohibition on consumption of pork in Islamic law is well established. As the Qur'anic verses state:

Say, "I do not find within that which was revealed to me [anything] forbidden to one who would eat it unless it be a dead animal or blood spilled out or the flesh of swine - for indeed, it is impure - or it be [that slaughtered in] disobedience, dedicated to other than Allah. But whoever is forced [by necessity], neither desiring [it] nor transgressing [its limit], then indeed, your Lord is Forgiving and Merciful." **(6:145)**

He has only forbidden to you dead animals, blood, the flesh of swine, and that which has been dedicated to other than Allah. But whoever is forced [by necessity], neither desiring [it] nor transgressing [its limit], there is no sin upon him. Indeed, Allah is Forgiving and Merciful. **(2:173)**

Although the use of porcine material in surgical prosthesis for the treatment of heart disease started in the twentieth century, Muslim scholars have established principles to draw on. In Al-Majmoo', a well-established Islamic encyclopedia, Al-Nawawi (famous Islamic scholar from the thirteenth century) said

"If a person breaks a bone, it should be set using a pure bone. Our companions – i.e., the Shaafa'is – said: it is not permissible to set it using something impure, when one is able to use something pure instead. If he sets it using something impure the matter is subject to further discussion. If it needs to be set and he could not find anything pure to use instead, then he is excused. But if that was not necessary and there was something pure that could be used instead, then he has sinned and it must be removed if there is no fear that he may die or the limb may be damaged as a result." End quote.

Based on this discussion, medical treatment by means of transplanting an animal organ of this type [i.e., from an impure animal e.g. pig] should meet two conditions:

1-The sick person should be in need of the transplant from the impure animal. This condition is met when specialist doctors testify that there is indeed such a need.

2-No pure organ is available that could be used instead.
If these two conditions are met, then there is nothing wrong with the surgeon transplanting this impure organ or part of it, and the presence of this impure organ in the patient's body is not regarded as having any effect on his prayer or acts of worship for which purification is required, since there is a reason for which a concession is granted allowing it[1].

The structure of the heart

The heart (see Figure 1) has two parallel circuit systems one on the right and the other on the left. There are four heart valves that control blood flow. They open to allow flow in the correct direction and close to prevent blood leaking in the opposite direction. Each circuit has inlet and outlet valves. The inlet valves are the mitral valve on the left and tricuspid valve on the right whilst the outlet valves are the aortic valve on the left and pulmonary valve on the right. Disease affecting the ability of heart valves to open is termed stenosis and that resulting in valve incompetence is referred to as regurgitation.

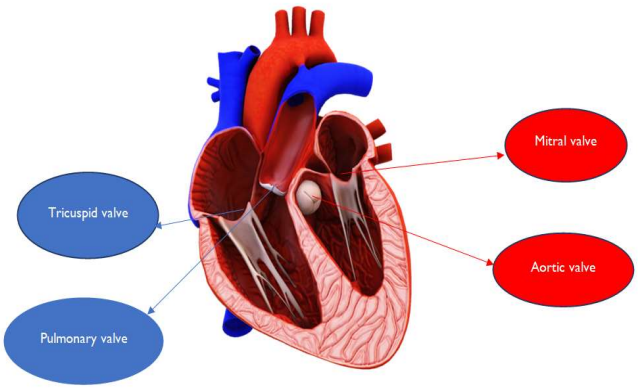


Figure 1: The four heart valves
Valvular heart disease

Epidemiology

Valvular heart disease (VHD) is associated with reduced physical function, quality of life and contribute to increased mortality[2]. The incidence of VHD varies considerably around the world with rheumatic disease being the lead cause for valvular dysfunction in low-income countries and degenerative disease as the predominant pathology in high-income countries[2].

Around 1.5m people aged above 65 in the UK are thought to have some form of VHD which includes aortic stenosis and mitral regurgitation. As a result of the aging population this number is likely to double in 2046 and reach 3.3m in the year 2056[3]. If left untreated, VHD can lead to heart failure and is associated with an increased mortality risk[4]. Treatment be broadly divided into surgical repair or replacement and transcatheter treatment. The choice between surgical and transcatheter intervention is influenced by a number of factors including the specific valve in question, disease severity, anatomical consideration and the overall condition of the patient. When it comes to surgical replacement two types of valves are available with specific characteristics, advantages and disadvantages. Mechanical prosthesis have excellent long term durability but necessitate patients to be on long term anticoagulation (blood thinners) with a vitamin K antagonist (warfarin). This may be inconvenient and increases bleeding risk. In contrast, biological valves don't require long term anticoagulation but at the same time are less durable. Biological valves are produced in most cases from bovine or porcine tissue. The decision to implant a bovine or a porcine based valve will take into account many factors accounting for anatomical and procedural characteristics. These factors should be discussed with patient and their family to help reach an informed consent.

Treatment options

Surgical treatment for VHD is well established with several decades of surgical experience. On the contrary transcatheter intervention is less established and despite producing favourable results in certain valvular pathologies the wide spread application across the spectrum of VHD is limited.

We aim in this article to give an overview of common valvular pathologies and give examples of biological valves from bovine tissue and synthetic material that are utilized in the treatment ofvalvular heart disease. The list is not intended to be exhaustive but will provide examples that may aid the treating physician and the patient to reach a decision which is patient-centred, avoids religious distress and possible litigation. Given the fact surgical treatment has developed over a long period of time resulting in a wide range of surgical prostheses available in the market we will provide a list of common biological surgical valves from bovine tissue. When it comes to transcatheter valves as the number of available prosthesis is limited we will discuss these options in more detail.

Aortic stenosis

Aortic stenosis is a common condition where it is estimated that 1 in 8 people over the age of 75 develop aortic stenosis[5](see figure 2). This pathology can also affect younger patients. The most common cause of aortic stenosis is valve calcification that occurs as part of the aging process. If left untreated half of the patients die or develop significant complications within 2 yrs[6].

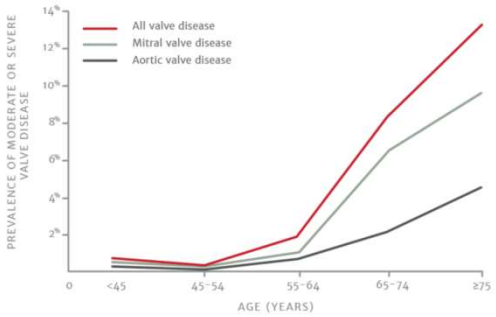


Figure 2. Prevalence of aortic stenosis

Treatment of aortic stenosis involves replacing the dysfunctional stenotic aortic valve. Depending on age, clinical and anatomical features the mode of replacement can be surgical (surgical aortic valve replacement SAVR) or transcatheter (Transcatheter aortic valve implant TAVI, also called TAVR) which is now a well-established minimally invasive treatment option. TAVI was first performed in Rouen by Cribier in 2002[7,8]. Since then the number of TAVI implantations has increased exponentially around the world. Broadly speaking, TAVI prosthesis utilize a balloon expandable or a self-expanding design. The choice between a balloon expandable and a self-expanding valve depends on multiple clinical and anatomical variables. The heart team which normally includes of a surgeon, interventional cardiologist and an imaging cardiologist makes a recommendation but ultimately the treating physician will choose the most suitable prosthesis depending on clinical and anatomical features. Below is

an example some of valve prostheses which are made using bovine pericardial tissue or synthetic material which should help the treating physician discuss with the patient the most appropriate valve choice.

Surgical prosthesis

These can be divided broadly into stented, stentless and sutureless valves. The choice between these types will depend on clinical and anatomical features. Figures 3 will provide some examples of aforementioned stented, stentless and sutureless prosthesis from bovine or synthetic tissue

Figure 3. Examples of stented, stentless and sutureless prosthetic aortic valves from bovine or synthetic tissue.

Transcatheter prostheses

Edwards SAPIEN

This is an example of a balloon expandable valve where the prosthesis is mounted on a balloon and is introduced to the body using a catheter commonly utilizing the common femoral artery (the vessel at the top of the leg). The latest iteration of the valve S3 ultra has a number of advantages to enhance safety clinical effectiveness. The EdawardsSapien valve (see Figure 4) has been studied in several clinical trials[9-13], is widely used across the US and Europe, and has received a CE mark as well as FDA approval. The valve is available in four sizes (20mm, 23mm, 26mm, 29mm) and has an outer skirt to improve seal at the annulus (site of implantation and valve anchoring) and reduce the risk of paravalvular leak. It has a low profile access and a frame design with low frame height and open cell geometry allowing for better coronary access (access to the coronary arteries that supply blood to the surface of the heart). The use of the Edwards Sapien valve has been approved for use across the spectrum of high, intermediate and low risk from conventional surgical aortic replacement (SAVR).

Figure 4. Edward Sapien ultra TAVI prosthesis

ALLEGRA TAVI System TF

This is an example of a self-expanding valve. It has received CE mark for the treatment of severe calcified aortic valve stenosis in high-risk patients with elevated, surgical risk or in patients with a symptomatic degeneration of an aortic valve bioprosthesis. Allegra (see Figure 5) consists of a nitinol stent frame with a valve made of bovine pericardium. The delivery system uses a Permaflow technology, which ensures permanent blood flow condition throughout the process of valve positioning and deployment sequences. This principle allows early functionality of the valve. In contrast to other established TAVI systems the Allegra is a newly developed valve and therefore, the evidence for its use comes from smaller studies[14-16]. However, there are a number of functions that make the Allegra system a distinctive and a promising option. The concave shape of the stent frame with a tip deflection during diastole is designed to reduce shear stress and therefore, is likely to improve long term durability. The movable points at commissure reduce mechanical stress on the leaflet. In addition, the Allegra TAVI system has a frame with large cells and an outer skirt to reduce paravalvular leak.

Figure 5. Allegra TAVI system

Aortic regurgitation

Aortic regurgitation can be caused by disease of the aortic valve cusps and/or by disease of the aortic root and the ascending aorta. Degenerative disease is still the most common aetiology in high income countries accounting for two third of the cases[17]. Other causes included rheumatic and infective endocarditis. Treatment of aortic regurgitation is mainly surgical. Figure 3 lists examples of surgical protheses that can be utilized in the treatment of aortic regurgitation. The use of transcatheter heart valves to treat native pure aortic regurgitation has multiple challenges and is off label in certain cases that are deemed inoperable or at prohibitive risk from conventional surgery (SAVR).

Mitral stenosis

Mitral stenosis can be caused by a rheumatic, congenital or rarely by a degenerative process. Rheumatic fever is the leading cause of mitral stenosis across the world and remains a significant problem in the developing world affecting young patients, whereas its prevalence in industrialized countries has significantly declined[18-20]. Treatment involves mitral valve surgery and percutaneous/transcatheter that can be utilized in certain situations. Figure 6 lists common mitral prosthesis from bovine tissue. The percutaneous option involves a balloon which comes from synthetic material to dilate the stenotic (diseased) valve. In selected cases some TAVI prostheses were used in the mitral position to treat patients who were deemed high risk for conventional surgery and unsuitable for balloon intervention.

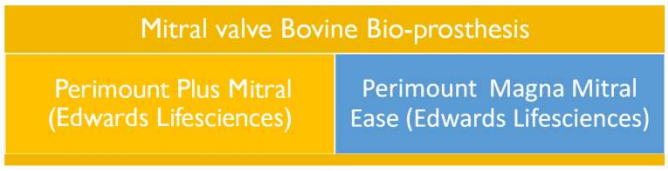


Figure 6. Mitral valve prosthesis from bovine tissue commercially available in current practice

Mitral regurgitation

This is the second most common valve pathology in Europe[21,22]. Treatment of mitral regurgitation is surgical with valve repair or replacement. Surgical prostheses have been described in figure 6.

However, if the operative risk is high, transcatheter options can be considered in certain cases where transcatheter edge to edge repair (TEER) is the most evidenced. This option involves synthetic material rather than bovine or porcine tissue. Example of these devices are listed below. To our knowledge, no designated mitral valve prosthesis from bovine material is currently available in the market. However, several devices (see table 1) are currently under clinical evaluation and utilizes the transapical and transfemoral routes[23]. The transapical approach involves introducing the valve using a small incision from the apex of the heart. The transfemoral route makes use of the femoral artery.

Mitral clip

The device is an example of the edge to edge repair and consists of a small metal clip covered with a polyester fabric that is implanted on your mitral valve using a designated catheter system.

Pascal system

This is another example of the TEER system that similarly to the Mitra clip device uses synthetic material. It comes in two sizes pascal and pascal Ace (Figure 7).

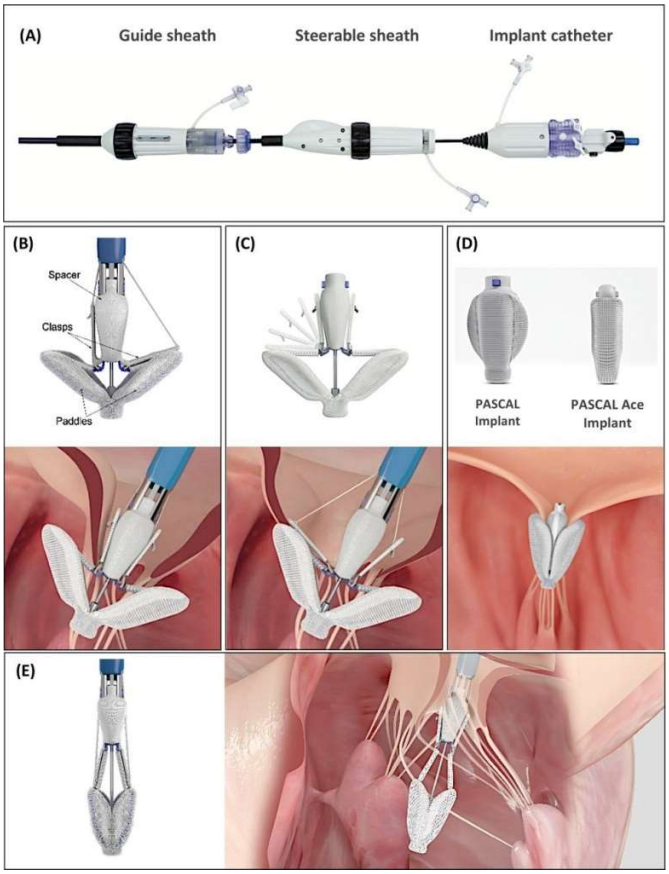


Figure 7. Pascal and pascal Ace systems

Valve	Manufacture	Approach
Tiara transcatheter mitral valve	Neovasc Inc. Richmond, Canada	Transapical
The Intrepid valve system	Medtronic	Transapical
EVOQUE	Edward Lifesciences	Transfemoral
The Sapien M3 system	Edward Lifesciences	Transfemoral

Table 1: Examples of transcatheter mitral prosthesis from bovine tissues under clinical evaluation

Tricuspid stenosis

This pathology is often combined with tricuspid regurgitation and is usually associated with disease of the mitral or aortic valve. Treatment is predominantly surgical. Figure 8 describes common surgical prosthesis.

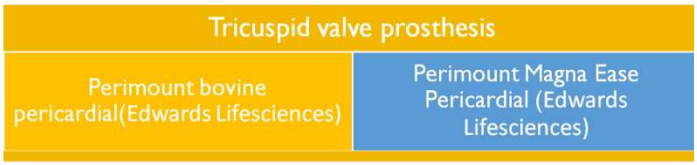


Figure 8. Examples of tricuspid valve prosthesis from bovine tissue commercially available in current practice.

Tricuspid regurgitation

The incidence of significant tricuspid regurgitation increases with age affecting 4% of the population aged 75 or over[23]. The most common aetiology of tricuspid regurgitation is secondary to disease affecting the right side of the heart (right ventricle/atrium) and is often associated with valvular heart disease of the mitral and or the aortic valve. If left untreated severe tricuspid regurgitation is associated with reduced survival[23-26] and increased incidence of heart failure[28,29]. Surgical treatment is recommended in all symptomatic patients. See figure 8 for a list of devices.

Transcatheter tricuspid valve intervention (TTVI) is under evaluation and continuous development. It involves placing a ring around the valve, bringing together the valve leaflets or using a designated prosthetic valve. Below are few examples of each type

Cardioband

This design utilizes a ring manufactured using synthetic material and is placed using a transcatheter system. (See Figure 9).

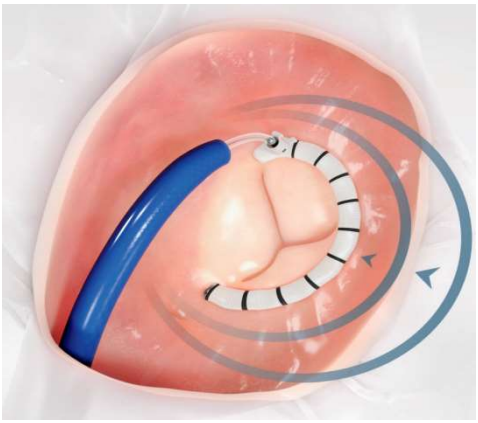


Figure 9. Example of cardioband system

Triclip

This device is an example of the TEER system that consists of a metal clip and synthetic material

Pascal system

Another device that utilizes the TEER approach and made of a metal clip and synthetic material. As in the mitral system it comes in two sizes pascal and pascal ACE. (See Figure 7).

EVOQUE tricuspid valve replacement system

This is an investigational device that has a prosthetic valve made using bovine tissue and implanted into the patient tricuspid valve using a transcatheter approach (see Figure 10).

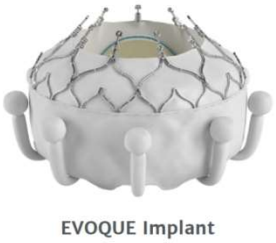


Figure 10. EVOQUE system

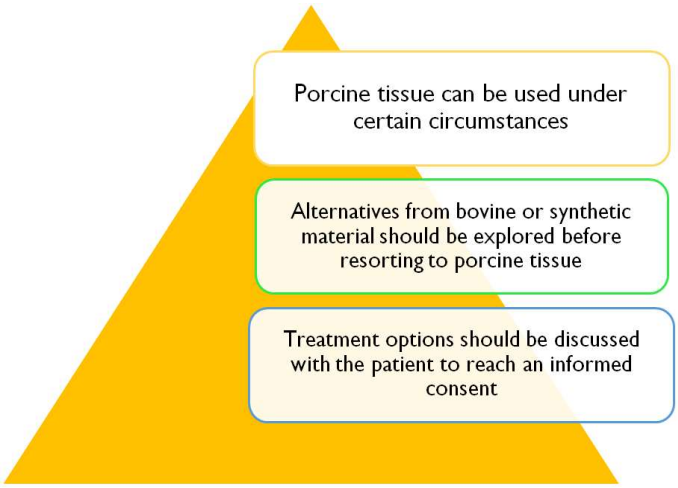
Summary

Valves are the main component of the heart structure. They work continuously and efficiently in a synchronised harmonic way to maintain a coordinated flow of blood in the right direction. Valvular heart disease is common affecting 1 in 40 below the age of 40 rising to 1 in 10 in people aged 75 or more and can range from being asymptomatic to severe and life-threatening[5].

Pharmacological treatment options were initially developed to alleviate symptoms, however, given the mechanical nature of the disease, over time there has been an increasing focus on the surgical repair or replacement as a curative option. Transcatheter treatment has gained increasing momentum particularly in patients at a high risk of surgical intervention and in certain cases where clinical and anatomical factors are favourable. Bioprosthetic tissue derived from bovine or porcine material has been used in surgical and transcatheter heart valves.

The prohibition of consumption of pork in the Islamic law is well established. The permissibility of porcine bioprosthetic heart valves involves two important concepts. The need for this particular treatment and the absence of an alternative option[1]. In general, each individual patient's scenario must be assessed, associated harms identified and weighed up by the patient and family in consult with the treating physician to reach an informed consent particularly if the use of porcine tissue is felt unavoidable. With the advancing in technology and development of new valve prosthesis alternatives to porcine tissue are becoming more readily available and these should be explored when treating Muslim patients.

Key messages



Funding disclosures or relationships with industry:
Dr.Hazim Rahbi received an educational grant from Edwards life science. Dr. Firas Aljanadi: No disclosures or Conflict of interest.

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Journal of the British Islamic Medical Association

Ethics
Vol 11 - No. 4 | August 2022 | www.jbima.com

"Is Brain Death Actual Death?" "Absolutely not !"

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Keywords: *Islamic bioethics, Brain death, Organ donation, Organ transplantation*

Abstract

Despite the concept of brain death being around for over five decades and the various attempts to define death by different disciplines, the question, "Is brain death actual death?" continues to be a source of controversy and debate. Unfortunately, the arguments put forward by the proponents and opponents are often highly detailed and complex and sometimes so convoluted that only those with academic interest in the field take the trouble to read them[1,2,3]. Despite the scholarly input, none of the arguments put forward have been decisive.

The short article, by focusing on some basic principles/ features of actual traditional death which are widely if not universally accepted across the whole spectrum of human society, together with basic logical arguments, demonstrates that brain death is not actual death.

Brain death is death is a time-bound concept of convenience rather than the accumulated understanding and wisdom of what actual death is over centuries of practical experience.

If we accept the reality that brain death is not actual death but a new entity, a new understanding of death which was proposed in 1968 to reflect time bound societal needs and values then this opens up a number of ethical questions which need to be discussed by Muslim scholars and Muslim doctors. Do the societal needs and values on which the concept of brain death was proposed reflect our Islamic values and traditions?

Introduction

The question of whether brain death is death or not has been posed since 1968, when the Harvard Ad Hoc Committee[4] under the chairmanship of Henry Beecher proposed equating brain death with death. Many experts from various fields of knowledge have tackled this question from different perspectives: medical, ethical, philosophical, religious etc. There is a huge amount of academic literature on the issue, yet the question remains unsettled. The problem is partly due to the fact that the word "death" is a vague term in that there are many different kinds of death, such as social death, spiritual death, human death, clinical death, religious death, legal death, biological death, and actual death. So, when we ask the question "Does brain death equate with death", we need to qualify what kind of death we are referring to, in order to make the question more specific and allow us to derive at a more meaningful answer.

A further complication is that the Harvard Ad Hoc Committee had proposed a new understanding of death, effectively a new entity to be regarded as death. This entity characterised by irreversible coma and apnoea was labelled "brain death", and it gained acceptance over the forthcoming years. But it remained unclear what exactly was being diagnosed and why it should be called death, since this new entity was very different from the traditional understanding of death in terms of its features and criteria for diagnosis.

Over the years some people tried to put forward the idea that brain death was another way of diagnosing actual traditional death on the basis that the brain is the master integrator and without it the rest of the body will disintegrate. This theory is probably what led to the

confusion and controversy regarding brain death. Even though this theory has been successfully refuted the controversy continues.
Whatever criteria we propose to diagnose or declare death must fit in with our general understanding of the word death. After all, death is not a new phenomenon, it has been around ever since human beings have inhabited the Earth and transcends all human societies without exception. Furthermore, whether brain death is actual death or not should be applicable to all human beings, irrelevant of country, jurisdiction, race, or religion.

Basic Principles

While trying to answer the question: "Is brain death actual death?" let us consider the following four basic principles related to death:

1. A person who is known to be alive continues to be alive unless there is evidence to the contrary.
2. An individual undergoes only one actual death.
3. Actual death is irreversible. A dead body does not move, it will not make any kind of recovery, instead it will start to decompose.
4. Actual death is not synonymous with legal death.

Let's look at each one of these basic principles in a bit more detail:

1. A person who is known to be alive continues to be alive unless there is evidence to the contrary.

This basic principle of presumption of continuity is accepted universally. In the context of death, it means that a person who is alive when admitted to the ICU remains alive unless there is clear-cut evidence to the contrary. If brain death is to be accepted as actual death, then the onus is on the proponents of brain death to prove death has indeed taken place, and not for the opponents to prove the brain dead person is alive. The question then is what degree of evidence should be required to declare an individual dead. Is a dominant probably of 51% sufficient or should a diagnosis of death be based on near certainty or at least as certain as possible?

2. An individual undergoes only one actual death.

Actual death takes place only once in each individual; it is wholly irreversible, barring an act of God Almighty.

3. Actual death is irreversible. A dead body does not move, it will not make any kind of recovery, instead it will start to decompose.

This feature is universally accepted as a feature of actual death. The dead body of an individual who is actually dead is totally unresponsive to any external stimuli, it does not move. Yet a large percentage of brain dead patients exhibit spontaneous movements or movements in response to external stimuli[5,6,7]. Furthermore, the body of brain dead individuals can continue to absorb and digest food, thereby, able to grow and mature; the body of a brain dead individual does not decompose, it can be kept in that state for years, as can be seen from the case of Jahi McMath[8,9]

On very rare occasions, brain dead individuals have recovered, something which can never happen in actual death. Lewis Roberts[10,11], a 19-year-old man who suffered serious trauma to the head following a motor vehicle accident, was declared brainstem dead at University Hospitals of North Midlands NHS Trust in the United Kingdom. However, hours before surgery to remove his organs for transplantation, he began to breathe on his own and a few weeks later he began to talk.

Zack Dunlap[12]was declared brain dead in 2007, in Wichita Falls, Texas, after suffering severe brain injury following a motor accident. A PET scan confirmed a diagnosis of whole brain death by showing no blood flow to Zack's brain. While waiting for the organ-harvesting team to arrive Zack's family noticed signs of life. 48 days after being declared brain dead Zack went home.
Roberts and Versnick reported two cases of brain death in Canada who regained spontaneous respiration[13].
One reason why the incidence of recovery from brain death is extremely low may due to the fact that soon after diagnosis of brain death life support systems are withdrawn, or organ retrieval takes place. Both these interventions result in actual death.

4. Actual death is not synonymous with legal death.

Legal death is a state when an individual is considered dead in the eyes of the law even though in some cases the individual may not be actually dead.
Ideally, an individual should be declared legally dead after actual death has taken place. This is what happens in the vast majority of cases and there is no need to distinguish between legal death and actual death.
However, in certain circumstances it is not possible to ascertain if an individual has actually died or not, such as

a person who goes missing for many years, in which case the law courts can issue a declaration of presumed death based on evidence. Individuals diagnosed as brain dead are also presumed to be dead, thereby allowing such patients to be declared legally dead.

A society can determine the definition of legal death to suit its needs, but actual death is an act of nature or, for the religiously minded, an act decreed by God Almighty. Consequently, legal death varies from country to county and sometimes from State to State within one country. Unlike legal death, the features defining actual death are immutable; it is a universal phenomenon with no boundaries of land, religion, or race.

In a similar way, society can decide the age of majority, that is when a child becomes an adult. This age varies from country to country. However, if a 15-year-old girl becomes pregnant then she is an adult by the law of nature even though she may be treated as a child in the eyes of the law.

Determining precisely when a child becomes an adult,or when exactly a person dies is very difficult to do in practice, but it is necessary to draw an arbitrary line in time when a child become an adult and when a living person becomes a dead body from a legal standpoint for the smooth functioning of a civil society.
It is important to realise the limitations of man-made laws, in that they can conflict with reality.
Unlike actual death, legal death, can on rare occasions, be reversed in the case of a missing person[14]and it has also happened in a case of brain death. Jahi McMath[8,9], who was declared brain dead and legally dead in California was transferred to New Jersey, where she remained brain dead, but she was no longer legally dead. Two death certificates were issued for JahiMcMath: one in 2013and the second one in 2018. The first death certificate was at the time of diagnosis of brain death and the second one 5 years later at the time of actual death.

For Muslims there are two obvious questions:

i) Is brain death legal death in Islam?
ii) Does brain death equate with the removal of the soul from the body by the Angel of Death?

These two questions have been discussed by the author in the paper entitled: Is the "Concept" of Brain Death Compatible with the "Reality" of Religious Death?[3,15] to which the reader may refer for details. Regarding legal opinions on brain death by Muslim scholars, the people who seek legal opinions from Muslim jurists or *fiqh* councils on brain death are almost always from the transplant community. So, the information provided to the jurists may be incomplete or even biased. It is important to look at the details of the discussions that took place before the ruling was issued and whether medical experts were consulted.

Whether someone is declared dead or not should not be dependent on whether the individual is an organ donor or not. However, the declaration of brain death as legal death is inextricably linked to organ donation. For the Muslim transplant community, the issue of whether a brain dead individual is legally dead or not is crucial because if the brain dead individual is not considered to be dead then the removal of vital organs for donation will be the cause of his death and there is liability within Islamic law for such a type of homicide.

Discussion and Conclusion

If all the four basic principles stated above are accepted, then the answer to the question: "Is brain death actual death?" is "Absolutely not!"This applies to all different types of brain death currently in clinical practice.
The concept of brain death is a social construct based on time-bound social needs and values, a pragmatic utilitarian approach to get from A to B. A number of medical developments occurred in a relatively short period of time inthe 1950s and 1960s to give birth to the concept of brain death. There was a cohort of patients with total brain failure (irreversible coma) with no hope of survival who could be kept alive by modern artificial ventilators. These patients were a burden on the health care system. Besides the costs, they were occupying precious resources such as intensive care beds. There was another cohort of patients with other types of end-stage organ failure such as kidney, heart, and liver. This second group were salvageable if a new organ could be transplanted into their bodies to replace their own failing organ. But the new organs to be transplanted must be living organs and living organs can only be obtained from living individuals.

If the patients with total brain failure who were effectively "as good as dead" since medicine had nothing to offer them could be labelled as "dead" then the futile use of expensive medical treatment could be stopped, thereby freeing up precious ICU beds and additionally, their organs could be used for transplantation. A value judgment was made. Effectively, sacrificing one life to improve or save the lives of a few. Those who do not accept that brain dead patients are truly dead but accept it as legal death then for them organ procurement from

brain dead patients is still homicide, but it is not illegal. Those who came up with the concept of brain death as death in 1968[4] did not have any malicious intent to kill patients, they were serving the needs of their society, the greatest good for the greatest number. The proposal put forward by the Harvard Ad Hoc Committee was not an alternative way to diagnose traditional actual death but a new entity, a new way to understand death. However, over time some people tried to equate brain death with actual traditional death by suggesting that the body could not survive without a functioning brain, the body would soon disintegrate. This false perception has been one of the root causes of the controversy and confusion surrounding brain death. Brain death is not actual traditional death but a separate distinct entity, a social construct, a value-based judgment when an individual will betreated as if he or she is dead. The British neurologist, Christopher Pallis, who is accredited with introducing the concept of brainstem death in the U.K. stated that his definition of death had a sociological basis.[16]

Brain death and actual or biological death should be seen as two separate entities. Brain dead individuals are not truly dead in the traditional sense, and neither are donors declared dead after controlled circulatory arrest (DCD), both are in the process of dying with very poor prognosis, but they are not truly dead at the time of organ procurement. The underlying basis for declaration of death after controlled circulatory arrest is brain death. It is assumed by depriving the brain of a blood supply for 5 minutes (this is the standard used in U.K.) ensures loss of brain functions thereby fulfilling the brain death criteria. Declaration of death after controlled circulatory arrest of 2-5 minutes can be said to be a state of impending death but not actual death because the patients can be potentially resuscitated after the heart stops beating for 2-5 minutes. In fact, hearts can be transplanted from such patients. If such a patient, after being declared dead after 2-5 minutes of cessation of the heart beating, is resuscitated, which every doctor accepts is possible, then we would have to conclude that death is reversible. And since successful heart transplantation takes place from such donors then one has to conclude that the irreversible can be reversed. The conclusion in both of these scenarios is ludicrous and the only logical explanation is that the assumption brain death is actual death is false.
Scholars have also discussed whether life and death are interconnected or independent entities. If they are considered to be independent entities then it should be possible for an individual to be alive and dead at the same time, which clearly does not occur, leaving us with the conclusion that life and death are inter-connected, our are either dead or alive.

There is no disagreement that living organs can only be obtained from living human beings. If organs could be procured from truly dead individuals, then there would be no shortage of organs. This is further evidence that organ donors after brain death and controlled circulatory death are not actually dead.

The concept of brain death increased the supply of living organs, perhaps not by design, but controlled circulatory arrest (DCD)criteria for death was designed specifically to further increase the supply of living organs. Despite these new criteria for declaring death, the demand for organs still outstrips the supply of organs. In response to this shortage some countries have introduced donation prior to death (DPD)[17,18] thereby firmly putting to one side the dead donor rule[19] which was probably being violated anyway, other countries such as the U.K. have introduced a system of presumed consent. Both these methods are controversial. You only need one case to refute a theory. The theory of brain death is actual death is refuted by cases like Lewis Roberts[10,11]and Zack Dunlap[12]. Lewis Roberts and Zack Dunlap were both clearly declared brain dead and scheduled for organ retrieval, but both showed signed of recovery just a few hours before their organs were due to be removed. They both went on to make full recoveries. Lewis was playing football sixteen months after being diagnosed as brain dead; Zack went home 48 days after being declared brain dead and went on get married and have a family. We, doctors used to say: "No one who has met the criteria for brain death has ever survived." That statement may no longer be true.

If the question is: “Is brain death legal death?” then the answer is a firm, “Yes.”In many jurisdictions around the world brain death is accepted as legal death. Actual death is either presumed or it does not really matter.

An important question for Muslims is: “Is brain death legal death according to Islamic law?” Some religious authorities have said "Yes," while other have said “No.”[3]Law makers and jurists have the authority to determine what constitutes legal death in their jurisdiction or sphere of influence, but they do not have the same authority to dictate what actual death is. Actual death is determined by nature or from a religious perspective by God Almighty. Some commentators have put forward the idea that an individual undergoes a legal death and an actual death thereby suggesting that there

two types of death that an individual undergoes, but it also implies that brain death is not actual death.
Under certain circumstances what matters is legal death rather than actual death, in other circumstances actual death is more relevant than legal death.

The chances of a brain dead person making any meaningful recovery is miniscule. So, keeping such individuals alive with high-tech medical interventions is futile in the majority of cases. Added to this is the huge economic burden brain dead individuals place on the health care system and in some cases their families together with the prolonged emotional trauma suffered by close relatives if these patients are kept alive. Many religious authorities sanction the cessation of life support systems in individuals where the specialist doctors consider the case to be futile even if the individual does not fulfil the criteria of brain death.

Brain dead individuals can be said to be "as good as dead," or at least "dead enough" to declare them legally dead. The individual as a person is dead, hehas no perception, no interaction with either people or his environment. What is the point of keeping such individuals alive at great cost except up to the point of retrieving their precious organs for transplantation? It makes medical, economic, and perhaps ethical sense to label them as dead. This is the utilitarian approach to the problem.The concept of brain death as death has beenvery successfully marketed. There are no stakeholders to challenge this notion and it seems essential for the successof the solid organ transplantation program which besides beingcost-effective[20] brings with it huge health benefits to the recipients.
Besides the significant economic benefits and obvious health of labelling brain dead patients as legally dead it has oneother majorbenefit. The potential charge of homicide against those doctors who retrieve vital organs from these brain dead patients is eliminated. This is a very important consideration.
The debate on brain death and organ donation needs to move on. The question of whether organ donation is permissible in Islam or not has been exhausted. We must accept that organ donation from the truly dead is a myth. Only tissues and corneas can be retrieved from truly dead individuals. Only organs retrieved from living individuals are suitable for transplantation. Once we accept these realities then the ethical and moral debate can move forward to consider the new challenges facingour communities:

1. Is it morally justifiable not to discuss the issue of brain death in a transparent manner when trying to recruit potential organ donors?
2. To what extent is the rule "first, do no harm" applicable in modern medicine and Islam?
3. Do the social and ethical values on which brain death was founded fit in with Islamic values?
4. Is it justifiable to take one life in an effort to try to save several lives?
5. Can killing an innocent vulnerable individual ever be justified?

Even though there may be no benefit to society in keeping brain dead individuals alive, a case could be made that the individual himself may benefit from a religious perspective, in that such suffering may be a means of expiating sins.

In the future, if xeno-transplantation or another alternative becomes widespread such that human organs are no longer required then the concept of brain death will be relegated into the history books.

Until then, the combination of presumption of death in patients declared brain dead combined with presumed consent for organ donation should be of concern to the Muslim community but surprisingly the Muslim community did not raise any concerns when there was an opportunity to do so.

Transplantation surgery has been a great success of modern medicine and we should try to promote it but within the limits of permissibility of Islam. There is a need for greater dialogue and discussion on the subject between Muslim doctors and Muslim scholars as well as a need for greater transparency and involvement of the public.

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Journal of the British Islamic Medical Association

History

Vol 11 - No. 4 | August 2022 | www.jbima.com

Through the keyhole: Analysing the Contribution of Islam to the Development of Anatomical Dissection

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Keywords: *Ancient, Anatomy, Arabic, Dissection, History, Islamic, Surgery*

Abstract

A simple look at the demographics of our world today bears testimony to the influence that Islam has had on our planet and with close to 2 billion adherents, it is safe to conclude it is a vast one. However, Islam's influence in our world is not merely limited to population size but extends and encompasses a huge scope of disciplines and sciences. Islam aims to develop humanity in every arena of life through the guidance given in the Qur'an and Hadith. These both served as the basis for the Islamic Golden Age between the 10th and 18th centuries. The influence on medicine was vast, including anatomical dissection, the focus of this article. Many books authored by Muslims were being translated and taught all over Europe; Al-Zahrawi's book Al-Tasrif served as a key reference for medical knowledge in Europe for many centuries. The Islamic Golden Age ushered in huge changes to clinical practice due to the development of new technologies, instruments, and techniques by Islamic Golden Age physicians as well as the incorporation of the Islamic spirit within the practice of medicine by said physicians. This article will examine the progression of anatomical knowledge and how the knowledge developed or transmitted from the Islamic Golden Age has major implications for modern day practice.

Introduction

Anatomical research and dissection studies have been widely encouraged throughout Islamic History as another discipline to increase in knowledge and master. Muslim scholars in the East as part of the Baghdadi Caliphate translated and built upon the Roman and Greek works (1) with scholars such as Al-Razi, Al-Majusi, and Ibn Sina significantly contributing to the development of medicine and surgery in this era (2). Meanwhile, Muslim physicians and philosophers including Al-Zahrawi, Ibn Zuhr and Ibn Rushd were the most influential physicians in the western regions particularly the Cordoban Caliphate (3). Books such as Al-Zahrawi's Al-Tasrif were significant as they introduced innovations in the transmission of medical knowledge (4). Al-Tasrif discussed modifications to dissection techniques with detailed diagrams detailing case histories and spanning many chapters in a systemic regarding different ailments and their respective surgical and medical treatments.

Some people have tried to diminish these remarkable

feats by claiming that Arabs and Muslims Scholars were only translators of other cultures and did not contribute any new developments to medicine. It is certainly a travesty of justice to support such a ridiculous notion when there are such clear examples to the contrary, among them being the 11th-century Iraqi scientist Ibn al-Haytham, who developed a radically new concept of human vision which differed from old Greek theory. Ibn al-Haytham's detailed description of ocular anatomy forms the basis for his theory of image formation derived from this fundamentally new theory from experimental investigations (5)(6). His Book of Optics was translated into Latin in the 12th century and continued to be studied both in the Islamic world and in Europe until the 17th century. Ibn al-Nafis, a 13th-century Syrian physician, re-addressed the question of blood movement in the human body referring to evidence derived from anatomical dissection, Ibn al-Nafis described and concluded, that the blood in the right ventricle must be carried to the left by way of the lungs and not through invisible passages in the septum as Galen said (5)(7). The present paper aims to review the history of anatomical dissection with respect to the Islamic Golden Age specifically.

The disciplines of medicine, surgery and anatomy provided an exemplar display of God's intricately beautiful and detailed creation to its students. Ibn Rushd mentions in his book Fasl Al Maqal, "Knowledge of the ways of creation leads to intimate knowledge of the Creator. The better you know these ways the more intimate your knowledge of the Creator will be." He observed that a person who studies anatomy must increase his belief in God. Many of his colleagues would have also considered the study of anatomy not only as indispensable to their professional advancement, but also to understand the wisdom and perfection of God's design of the human being (5). However, the relationship between Islam and human anatomical dissection is a bit more complex as they can be performed on either a living or a dead body. The issue mainly lies regarding the use of anatomical dissection in human cadavers as opposed to surgical dissection. Therefore, before continuing to discuss the contribution of the Islamic Golden Age to the development of dissection, it is important to contextualise and address Islamic beliefs regarding dissection of the human body.

Autopsy:

Autopsy refers to the dissection of a dead body, specifically a human cadaver. Today, it is done for two main reasons which are medical education in hospitals and legally in forensic investigations to determine the cause of death. Some scholars argue that human anatomical dissections cannot be justified within the Islamic framework as the body must be purified and undergo the burial process swiftly. However, the Qur'an and Hadith do not directly address the issue of autopsy which has led to differing interpretations regarding its use. This is demonstrated even within the thinking of the Golden Age physicians, human dissection was not practiced in early Islam, but was in later periods. Some Muslim physicians dissected bodies for education and learning, such as Salahuddin's physician Ibn Jumay, Abd Al-Latif, Ibn Zuhr and Ibn Rushd with the latter stating that: "Anyone who practices anatomy will increase his faith in Allah" (8). By contrast, Ibn al-Nafis stated that "precepts of Islamic law have discouraged us from the practice of dissection, along with whatever compassion is in our temperament" (9). When the Nile River dried up and there was much starvation, Mowafak al Bagdadi had numerous dead bodies on which to practise his anatomical dissections. It was these very dissections that enabled him to discover and prove that the mandible consists of one part, not two, as Galen had previously postulated. He noted, "I am sure now it is one bone part – mandible… after I had dissected about 2000 human skulls, and it is opposite of what Galen said" (10).

Attitudes towards autopsy have changed over time with the viewpoint of permissibility gaining greater prominence in recent years. Prior to the 10th century, dissection was not performed on human cadavers (11). Autopsy dissection had then been approved by the highest Islamic commissions. Yet out of respect for the dead and the feelings of the deceased's families, many scholars chose not to carry out these dissections, instead preferring animal dissections. Some did dissect human cadavers, but in secret settings, while others did it with government support. In 1952, the head of Al-Azhar in Egypt stated regarding autopsy that "Necessity permits the forbidden," thus allowing autopsies in cases of criminal investigations (12).

Surgical Dissection:

Having now covered autopsy dissections and the Islamic viewpoint through history regarding this briefly, now this article will look at surgical dissections on live patients. The golden rules in use more than 1000 years ago are still the same basics for learning and developing medical and surgical skills in our time. For example, improving our neurosurgical skills now depends on one approach: practising in the lab, studying anatomy, and cadaver dissection. This practice gives us the right experience to

carry out our work, and it is the same principle used ten centuries ago by Islamic and Arabic scholars in medicine. In the introduction to his book, al-Zahrawi pointed out that good practice in surgery requires a sound knowledge of anatomy or the patient's life will be in danger (13). To give this remarkable civilisation its due right, a more thorough analysis needs to be undertaken, looking in detail at what the most famous of its contemporaries have achieved in the field of anatomical dissections.

Al-Razi (Rhazes 850-923):

Firstly, we will cover Abu Bakr Al-Razi (Rhazes 850-923). Al-Razi's contribution to neuroanatomy is well documented in his works which most notably include Kitab al-Hawi fi al-Tibb and Kitab al-Mansuri fi al-Tibb. He described nerves as having both motor and sensory functions and as originating in pairs from the brain and spinal cord with membrane coverings (14). He was the first physician to describe the phenomenon of concussion (14, 15) and in his books he dedicated section to teaching his students to avoid injuring the small nerves drooping eyelid during making the surgical flap stating: "The surgeon must therefore know the anatomy of the nerves, the veins, and the arteries, so as not to sever them by mistake (16, 17). Al-Razi also stated that there were seven cranial and thirty-one peripheral nerves, assigning them the order initially given by Galen. He divided the peripheral nerves into eight cervical pairs, twelve thoracic pairs, five pairs in the lumbar spine, and three in the sacral spine, and he used this knowledge of segmental nerve innervations to localise lesions in patients. (18). He had a patient who complained of numbness of his little finger after neck trauma. He said this patient must have a problem in the last cervical vertebra because he knew from his anatomical studies that the nerve from the last cervical vertebra goes to that finger. Al-Razi described the ascending laryngeal nerve and noted there might be two or double branches on the right side.

Al-Majusi (Haly Abbas 930–994):

Next was Al-Majusi (Haly Abbas 930–994) who was a Persian physician and psychologist whose Kitab al-Malaki (The Royal Book) has been credited with outperforming Al-Razi's Comprehensive Book of Medicine and Ibn Sina's Canon of Medicine in some respects. It was one of the earliest illustrations of surgical approaches to skull fractures and other disorders. In addition to discussing internal diseases, he also discussed their treatments and causes. Between the 10th and 13th centuries, the medical school at Salerno, Europe's centre for medical training, used Kitab Al-Malaki as a core text. While he was in Baghdad's Buwayhid dynasty, al-Majusi had the responsibility of royal physician. Throughout his writing, he frequently refers to Allah, indicating a deeply religious person (19).

Figure 1: The anatomical sections of the Canon of Medicine by Ibn Sina

Figure 2: Excerpt from Al-Majusi's Royal Book

Al-Zahrawi (Albucasis 930–1013):

Al-Majusi's contemporary was none other than Al-Zahrawi (Albucasis 930–1013). Born in Cordoba, Spain, he was an Islamic physician who was considered by many to be the "father of modern surgery". Al-Zahrawi is most well-known for his revolutionary book Al-Tasrif which was finalised in 1000 AD and covers a wide variety of medical related fields (20, 21). Among the

oldest books containing diagrams of surgical instruments, Al-Tasrif was also an illustrated encyclopaedia of medicine and surgery which described operations and interventions for varicose veins, skull fractures, teeth removal, and forceps deliveries. As one of the most systematic and practical medical treatises of the era, Al-Tasrif noted a few differences between that which Al-Zahrawi saw regarding anatomy and from what Galen and other predecessors had seen. In the introduction to his book, Al- Zahrawi pointed out that good practice in surgery requires a sound knowledge of anatomy (22). He greatly contributed to the advancement of medicine and surgery throughout Europe, both in the East and the West with his concepts continuing to influence the practice of surgery even now (23). During the 12th to 17th centuries, Al-Tasrif was used as the textbook for medical education in most European universities instead of Ibn Sina's The Canon of Medicine. Al-Tasrif made mention of creating incisions, healing of wounds through cauterisation, burning wound with a red-hot steel rod to decrease bleeding and reduce the probability of infection, and bone-setting (22). To further prevent post-surgical infection, he recommended that the wound be regularly cleaned with wine, oil of roses, salt water, or vinegar (24). These books comprise a range of components of surgical therapy in detail based totally on Al-Zahrawi's personal experiences of the surgical operations alongside more than 200 illustrations of instruments' designs. Al-Tasrif also includes a section regarding treatment of gynecomastia which serves as the perfect example of how Islamic Golden Age knowledge was innovative and has had far reaching effects even today in modern surgery.

Figure 3: Al-Zahrawi blistering a patient in the hospital at Córdoba

Gynecomastia refers to the phenomenon of breast enlargement in males via many different aetiological causes. Although this condition was recognised since Ancient Greece, no historical evidence exists of any surgical treatment for gynecomastia before Paulus of Aegina. Later in the Islamic Golden Age, Al-Majusi described surgical management of gynecomastia in his Kitab al-Maliki (The Royal Book) and Al-Zahrawi spoke at length regarding gynecomastia treatment in his book Al-Tasrif. The accusation was levelled at that their works were mostly copies of Paulus of Aegina (25). However, the technical innovations and differing modifications of the surgery and associated medicinal remedies found in Al-Tasrif give more credence to the idea that Al-Zahrawi's accounts were based on his own experiences in surgery. Al-Zahrawi's surgical methods have remained unchanged for centuries with many sections of his recommendations still indicated in practice today.

Figure 4: A page of Al-Tasrif depicting the surgical tools devised or utilised by Al-Zahrawi

According to Al-Zahrawi, there are two innovative surgical techniques to correct gynecomastia. Unlike Paulus of Aegina's previous recommendation of incision below the breast (26), Al-Zahrawi's first method would possibly provide breast uplift in addition to lunate incisions over the breast. The second surgical approach described by Al-Zahrawi for the surgery of gynecomastia involved making two lunate incisions along the upper segment of the breast to allow the removal of subcutaneous fat (26). Uniquely, Al-Zahrawi advocated and practised adding powder made from natural substances over the surgical wound to accelerate healing, he mainly used styptic powder, but other substances used included aloe vera, sarcocolla and gum Arabic tree (27). Interestingly, these substances have been shown much later to be effective antimicrobial agents and promote

wound healing. It's worth noting that Al-Zahrawi clearly identified bleeding because of gynecomastia surgery, and as a result, he recommended compression cotton dressing (28). These examples are a remarkable demonstration of Al-Zahrawi's advanced pharmacological knowledge and surgical prowess which was far ahead of his time (29).

Ibn Zuhr (Avenzoar 1091-1162):

Ibn Zuhr (Avenzoar 1091-1162) was a physician from Andalusia most well-known for his book Kitab Al-Taysir which covered many aspects of treatment including medicine and surgery as well as improving diet for certain conditions. His most significant contribution in this discipline is his use of experimental trial-and-error approach in evaluating novel or controversial surgical procedures for the first time. For centuries, the role of tracheotomy in the resuscitation of life-threatening asphyxia owing to upper airway obstruction was debatable. It was only until the Islamic era, when AI-Razi and later Ibn Sina began to speak positively regarding the benefits of tracheotomy in certain cases and helped to further develop the technique (30)(31)(32).Despite the fact that AI-Razi described tracheotomy as a last resort, he reported witnessing patients with wounds in their throats through which breath was expelled; yet, the patients lived and made a full recovery. However, the dispute relating to its use raged on and thus Ibn Zuhr decided to conduct a tracheotomy on a live goat to settle the debate and demonstrate that tracheotomy is a safe procedure (33). He felt that tracheotomies were not being performed on patients who desperately needed them because of the controversy surrounding its use (34). Ibn Zuhr's use of an experimental animal model to solve a clinical problem was a predecessor to the strategy used to establish many modern surgical methods. Following him in the 13th century, writers such as AI-Baghdadi (35) and Ibn Al-Quff (36) advised tracheotomy without reservation in life-threatening upper airway blockage that could not be eased by other methods, detailing the procedure in more depth.

Other passages of Al-Taysir demonstrate Ibn Zuhr's inquisitive mentality and his dependence on trial and error to come to conclusions. Faced with the challenge of no effective therapy for individuals with serious lung ulcers, he learned from shepherds that sheep suffer from a similar ailment for which there is a cure. Therefore, he then began performing post-mortem dissections on sheep to investigate ulcerating diseases of the lung (37). Another valuable concept that Ibn Zuhr developed was that of dedicating lots of commitment to educating and training upcoming surgeons to provide them with the necessary knowledge, skills, and experience before they can operate unsupervised. In Al-Taysir, he emphasises the significance of familiarity with the vasculature and organs of the head and neck while dealing with inflammatory swellings of the neck that are ripe and ready to rupture or drain (38). He continues to argue that only those with experience of dissection and sound anatomical knowledge are qualified to perform an operational intervention (39). He not only promoted learning knowledge but also practised implementing it and applying it to solve new problems. In many other places in his book Al-Taysir, Ibn Zuhr displays his level of innovation with instruments and management lines as he modified ophthalmic surgical instruments (40) and invented tubes for orogastric and rectal feeding for oesophageal paralysis patients, rejecting the notion that feeding could ever work by immersion in tubs of soup and milk (41). Furthermore, Ibn Zuhr highlighted his preference for medical management over surgery which marked a significant paradigm shift in surgery where previously there was an eagerness to undertake surgical dissections despite the risks of infection and haemorrhage. An excellent demonstration of this in practice was his reservation towards surgically treating bladder stones, instead favouring medical therapy. He explained in detail the required methods to aid the stone's natural course or cause its disintegration (42). Thus, he was a great advocate for prophylactic therapies such as medication and even preventative measures looking to improve the diet as options to be explored before considering surgery.

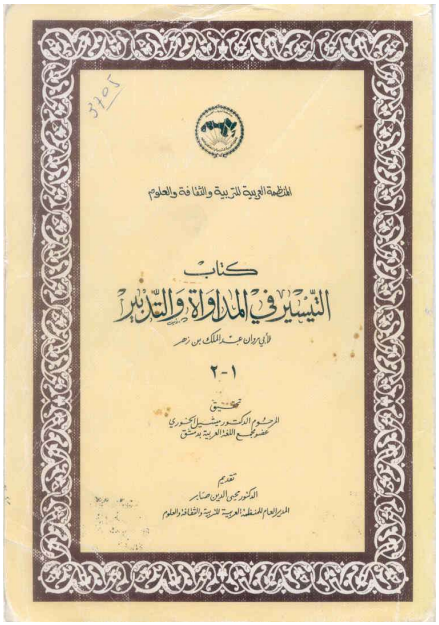

Figure 5: Title page of the Arabic edition of Al-Taysir

Ibn Al-Nafis (1213–1288):

Ibn Al-Nafis (1213–1288) was one of the last great Muslim physicians of this period and hailed from Syria. According to Ibn Al-Nafis, blood flows directly from the heart to the lungs, where it is "purified"- what he was referring to be the oxygenation of the blood in the lungs. This idea contradicts Galen's belief that blood is shunted from the right to the left side of the heart through septal pores (43). His observations were also based on detailed dissection, but not of the human body as he was among those who took a more sceptical approach to post-mortem dissection. By contrast the first Europeans to describe the pulmonary circulation accurately were Michael Servetus and Realdo Colombo more than three centuries later. Western medicine could have greatly benefited from his hypotheses regarding the cardiovascular system but unfortunately these were not widely circulated. Ibn Al-Nafis' accomplishments were not brought to the attention of others until William Harvey's discoveries in 1628 and it was not until van Leeuwenhoek used a microscope in 1676 to study lung parenchyma that Ibn Al-Nafis' observations were firmly established, with the crucial bit of evidence being the confirmed presence of pulmonary capillaries (44).

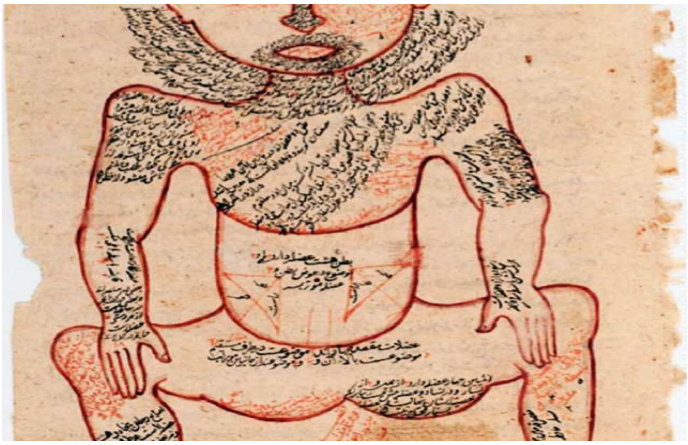

Figure 6: Ibn Al-Nafis' diagrams demonstrating pulmonary circulation

Conclusion:

In the same way as the heritage of the ancients was studied with great respect, non-Muslim scientists, Jews, and Christians in particular, played significant roles within the Islamic Golden Age's scientific community. It was the open, non-dogmatic atmosphere that encouraged people to engage in debate, share ideas and seek new knowledge by asking questions and examining available evidence (5). In fact, medicine was mainly practiced by Jewish and Christian physicians very early on in Islamic History, a fact that Imam Al-Shafi'i remarked on: "I do not know of any type of knowledge, after the knowledge of what is lawful and what is unlawful, more noble for a Muslim [to acquire] than that of medicine but, alas! They have neglected it—they have neglected one-third of human knowledge—and abandoned it to Jews and Christians" (45). One such example was Uhanna ibn Masaweh (d. 875), known as Joannes Damascenus, the famous Arab scholar who worked with anatomy, and when it was difficult for him to obtain cadavers, he dissected a special type of monkey whose anatomy was very similar to that of the human body. He carried out this dissection in a special room on the river side of Dejlla in Baghdad, and al Khaleefa Al Motasem ordered the monkeys from the Nile valley (present-day Sudan) for anatomical dissections These scholars also included Ishac al Israilie, Honein ibn Ishak (Joannitius 809-873), and many others.

If the Golden Age scholars had only preserved the ancient cultures without adding anything to them, that would have still marked a praiseworthy contribution to civilization as a whole and the European renaissance. As previously stated, the Arabic versions of the works of Hippocrates and Galen are the only copies that have survived which does demonstrate that the scholars of the Islamic Golden Age did work hard to translate the works of those who came before. But the great efforts of these scholars to develop their own original pieces of knowledge in the fields of anatomy, dissection and surgery cannot be ignored and deserves to be fully recognised in Western academic circles for how vital it has been to the development of modern surgery.

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Journal of the British Islamic Medical Association

History

Vol 11 - No. 4 | August 2022 | www.jbima.com

Who Discovered Hemophilia?

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Keywords: *Hemophilia , History of Hemophilia, Clotting Factors, History of Medicine, Albucasis, John Conrad Otto, Queen Victoria,*

Abstract

In the whole history of hemophilia, it is generally accepted that the main development in understanding the cause and the inheritance type of the disease accomplished in the last century.But, who really was the first to describe the disease?
The priority of the disease is still a matter of argument. We followed the tracks of hemophilia in history since the ancient times to the recent, trying to identify the priority in each discovery related to the disease, chasing the advances in treatment.
We found that the Arabian physician Albucasis may be the first who described the disease. He defined the disease, witnessed some cases, named it, and even suggested a treatment. Then, more than seven centuries had passed until the concern about the disease revived, thanks to its spread in the royal families of Europe.
In our treatise, we tried to shed light on the most important events in the history of hemophilia. We clarified how hemophilia spread in the royal families through Europe. Finally, we mentioned the discoveries and inventions in the recent age.

Introduction

The history of haemophilia represents one of the human mind's attempts to define and encompass a mysterious fascinating phenomenon. Although some western historians claimed the priority of discovering this phenomenon to Jewish writings or recent physicians, the real priority may be attributed to Albucasis, the Arabian physician who died in the 11th century. Treatment options for hemophilia patients present one of the most stimulating treatment stories of any patient group with an inherited disorder.

Definition:

Haemophilia is derived from the Greek "*haima*" which means blood and "*philia*" which means friend.In Arabic language; haemophilia means Naaor (ناعور) which means the unstopped bleeding vessel.

Haemophilia (also spelled Hemophilia in North America) is conventionally a group of hereditary genetic disorders that impair the body's ability to control blood clotting or coagulation. Thus, prolonged bleeding and re-bleeding are the diagnostic symptoms of haemophilia, especially

haemarthrosis, haematuria and large bruises. The most common form of haemophilia is haemophilia A which is anX-linked recessive inherited bleeding disorder resulting from a mutation in the F8Cgene which results ina deficiency of factor VIII. About a third of mutations are new sporadic mutations. Whereas, haemophilia Bis an X-linked recessive inherited bleeding disorder, previously known as Christmas disease, resulting from a mutation in the F9gene which causes a deficiency of factor IX. Similarly to most recessive sex-linked, X chromosome disorders, only males typically exhibit symptoms. Because females have two X chromosomes and because haemophilia is rare, the chance of a female having two defective copies of the gene is very low, thus females are almost exclusively asymptomatic carriers of the disorder. Bleeding manifestation in hemophiliac individuals are related to the level of reduced factor. There are other rare forms of haemophilia, which are less important.

Hemophilia in the Ancient and Medieval Ages:

The genetic mutation originally responsible for haemophilia in mammals is generally considered to be many thousands of years old.

The study of blood coagulation can be traced back to about 400 BC and the father of medicine, Hippocrates. He observed that the blood of a wounded soldier congealed as it cooled. Additionally, he noticed that bleeding from a small wound stopped as skin covered the blood. If the skin was removed, bleeding started again.

Aristotle noted that blood cooled when removed from the body and that cooled blood initiated decay resulting in the congealing of the blood.

According to many European historians, the earliest assumed written references to what may have been human haemophilia are attributed to Jewish writings of the 2nd century AD. A ruling of Rabbi Judah the Patriarch exempts a woman's third son from being circumcised if his two elder brothers had died of bleeding after circumcision. Additionally, Rabbi Simon ben Gamaliel forbade a boy to be circumcised because the sons of his mother's three elder sisters had died after circumcision.

Anyway, the Jewish writings didn't consider this condition as a disease. They included no medical description of the disease, nor treatment. Besides, death after circumcision may result from any other accompanying reasons like infections. As a result, those writings are considered as an observation of a condition may relate to haemophilia, but may not.

In the 12th century, Maimonides (1135-1204 AD)applied the rabbinic ruling to the sons of a woman who was twice married.

Albucasis, the First Physician Who Described Hemophilia:

The famous physician Al-Zahrawi – Albucasis (936-1013 AD), in the second Essay of his medical encyclopedia "*Kitab al-Tasrif*", described a disease which he named "علة الدم" or blood disease. His description corresponds with haemophilia.

Albucasis was far ahead in his description for many reasons:
firstly, his naming was indicative of the real cause of the disease.

Secondly, he noticed the spread of the illness in just one village, which is attributed to the inherited nature of it.

Thirdly, he was the first who noticed and described the disease, because, as he said, he didn't read of it in any of the ancient's medical books. Actually, we tried to find a former description of the disease in some ancient physicians, but we found nothing.

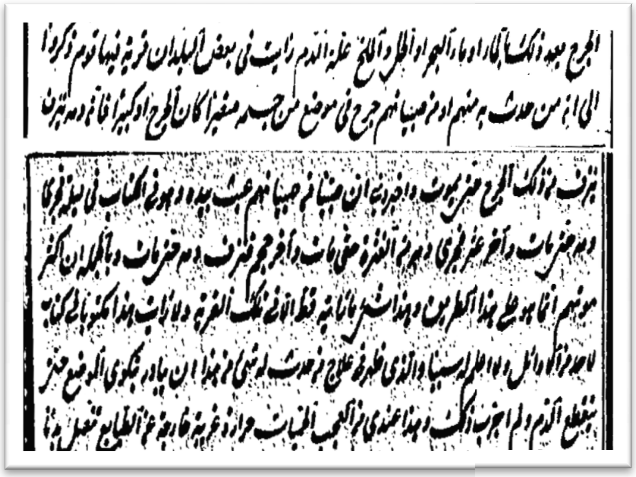
Fourthly, he noticed the limitation of the disease to males and their boys.

Fifthly, he characterized the disease with easy bleeding after minor traumas which is nowadays considered the primal symptom of the disease. He mentioned examples of three who boys bled until they died.

Sixthly, he admitted that he didn't know the cause of the disease which was impossible to be discovered in his time. Albucasis didn't pretend that he knew the cause which indicates his scientific method.

Finally, he recommended using the cauterization of the bleeding place until the vessels stop bleeding.

The treatment he suggested represents the most beneficial remedy available in his time.



From the Manuscript of Albucasis's book "Kitab Al-Tasrif" describing "Blood Disease" or Hemophilia

Hemophilia in the Recent Age:

Down the years there were rare scattered records of bleeding disorders more or less closely agreeing with the clinical picture we know. In 1770, William Hewson challenged the cooling theory and believed that air and lack of motion were important in the initiation of clotting. Hewson described the clotting process, demonstrating that the clot comes from the liquid portion of blood, the coagulablelymph, and not from the cells, disproving the cooling theory.

The first recent descriptions of haemophilia are from the end of the 18th century. In 1803, Dr. John Conrad Otto (1774-1844), an American physician, published an account about "a hemorrhagic disposition existing in certain families "in the "New York Medical Repository". He recognized that the disorder was hereditary and that although it affected only males the disorder was transmitted by unaffected females to a proportion of their sons. He was able to trace the disease back to a woman who settled near Plymouth, New Hampshire in 1720 AD. These accounts began to define a clinical syndrome on which the 19th century developed an extensive literature. The recent and rather strange name 'haemophilia' which means 'love of blood' appeared in the title of Hopff's treatise of 1828 published at the University of Zurich. Numerous dissertations, treatises and many papers were published in journals in the following years.

The rare occurrence of true haemophilia in the female is supposed first to have been described by Sir Frederick Treves in 1886, from a first-cousin Marriage.

The involvement of joints, to us the most characteristic symptom of haemophilia, was described in detail by Konig only in 1890.

The Royal Hemophilia:

Haemophilia figured prominently in the history of European royalty in the 19th and 20th centuries. Queen Victoria, through two of her five daughters (Princess Alice and Princess Beatrice), passed the mutation to various royal houses across the continent, including the royal families of Spain, Germany and Russia. Victoria's son Leopold suffered from the disease. For this reason, haemophilia was once popularly called "the royal disease".

The spread of hemophilia in the royal families of Europe was a very important factor in the development of medical knowledge about the disease. The physicians dived into the cases of hemophilia, trying to uncover its secrets, looking for the suitable remedy to enjoy the favor of the royal families.

The condition is not known among any of the Queen's antecedents, so that it is supposed that a mutation occurred at spermatogenesis in her father Edward, Duke of Kent, a mischance perhaps made more likely by the fact that he was in his fifties when she was conceived.

Haemophilia in the British Royalty:

Leopold was severely affected and suffered numerous bleeding episodes. In 1868 the British Medical Journal noted a 'severe accidental haemorrhage' leading to 'extreme and dangerous exhaustion by the loss of blood' at the age of 15. In 1884 he died of a cerebral haemorrhage after falling and hitting his head. He was 31 years old. His daughter, Alice, born the previous year (1883 AD), who became Princess of Teck, had a haemophilic son, Rupert, Viscount Trematon, born in 1907, who died at 21, also of a cerebral heamorrhage. The present British Royal Family haven't inherited haemophilia.

Haemophilia in the German and Russian Royalty:

Alice, Victoria's third child, passed it on to at least three of her children: Prince Friedrich, Princess Irene, Princess Alix and Princess Victoria.

Prince Friedrich Died before his third birthday of cerebral bleeding resulting from a fall.

Princess Irene of Hesse and by Rhine (later Princess Heinrich of Prussia), who passed it on to two of her three sons: Prince Waldemar of Prussia. Survived to age 56; had no issue. Prince Heinrich of Prussia whodied at age 4.

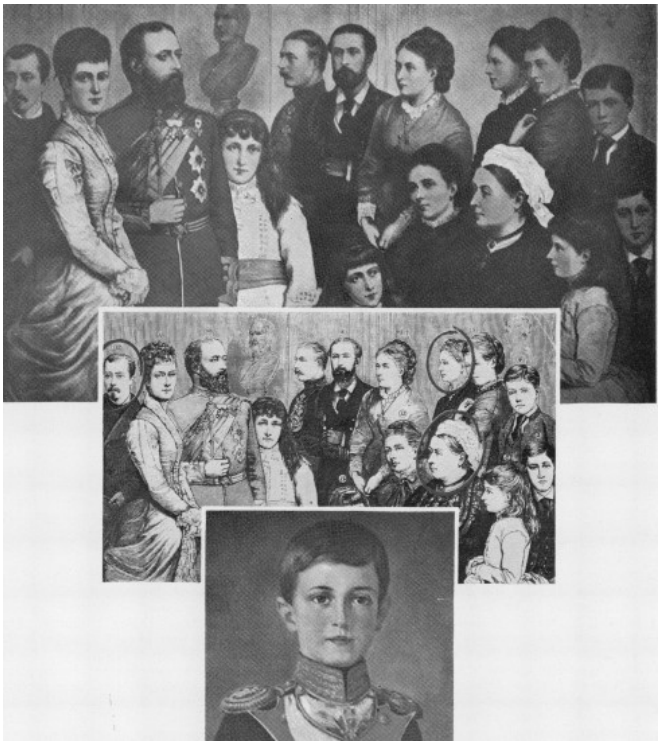
Princess Alix of Hesse and by Rhine. Alix married Tsar Nicholas II of Russia, and passed it on to her only son, Tsarevitch Alexei who was murdered by the Bolsheviks at the age of 13. Alexei's haemophilia was one of the factors contributing to the collapse of Imperial Russia during the Russian Revolution of 1917. The illness of the Tsarevich cast its shadow over the whole of the concluding period of Tsar Nicholas II's reign and alone can explain it. Without appearing to be, it was one of the main causes of his fall, for it made possible the phenomenon of Rasputin (1869-1016) and resulted in the fatal isolation of the sovereigns who lived in a world apart and wholly absorbed in a tragic anxiety which had to be concealed from all eyes. Rasputin used hypnosis to relieve pain and/or slow hemorrhages, and sent away doctors who some claim were actually prescribing then "wonder drug" aspirin. It is not known whether any of Alexei's sisters were carriers, as all four were executed with him before any of them had issue. One, Grand Duchess Maria, is thought by some to have been a symptomatic carrier, because she hemorrhaged during a tonsillectomy.

Princess Victoria of Hesse and by Rhine, Alice's oldest child and maternal grandmother to Prince Philip, Duke of Edinburgh, might have inherited the mutation, though the gene remained hidden for several generations before reappearing in the descendants of her eldest granddaughter, Princess Margarita of Greece and Denmark.

Haemophilia in the Spanish Royalty:

Princess Beatrice, Victoria's ninth and last child, passed it on to at least two, if not three, of her children: Princess Victoria Eugenie, Prince Leopold and Prince Maurice.
Princess Victoria Eugenie of Battenberg (later Queen Victoria Eugenia of Spain), who passed it on to Infante Alfonso and Infante Gonzalo. Infante Alfonso of Spain, Prince of Asturias who died at age 31, bleeding to death after a car accident whereas Infante Gonzalo who died at age 19, bleeding to death after a car accident. Prince Leopold of Battenberg. Later Lord Leopold Mountbatten. Died at age 32 during a knee operation.

Prince Maurice of Battenberg whokilled in action in World War I in 1914 at the age of 23. Maurice's haemophilia is disputed by various sources. It seems unlikely that a known haemophiliac would be allowed to serve in combat.



Queen Victoria and her family. Victoria (circled lower right) transmitted the gene to her son Leopold (circled) and to two daughters, one of whom, Princess Beatrice, is depicted (upper right). Tsarevitch Alexei (below) was Victoria's great-grandson.

Hemophilia in the Last Century:

It was Paul Oskar Morawitz (1879-1936) in 1905 who assembled coagulation factors into the scheme of coagulation and demonstrated that in the presence of calcium (Factor IV) and tissue thromboplastin (Factor III), prothrombin (Factor II) was converted to thrombin, which in turn converted fibrinogen (Factor I) into a fibrin clot. He introduced his landmark theory in Ergebn Physiol magazine. This theory persisted for 40 years until Paul Owren, in 1944, discovered a bleeding patient who defied the four-factor concept of clotting. Owren observed a cofactor that was involved in the conversion of prothrombin to thrombin. Thus factor V was discovered.

Many reputable scientists claimed early success in treating with unusual substances. A report in The Lancet in 1936 extolled the virtues of a bromide extract of egg white. As recently as 1966, a report in the esteemed scientific journal Nature claimed that peanut flour was also effective for the treatment of hemophilia. The first hint of success came with the report from R.G. Macfarlane in 1934 that snake venoms could accelerate the clotting of haemophilic blood, and he reported success in controlling superficial bleeds in people with hemophilia after topical application.

Factor VIII was discovered in 1937 by American researchers A.J. Patek and F.H.L. Taylor. They found that intravenous administration of plasma precipitates shortens blood clotting time. Taylor later calls the precipitates anti-hemophilic globulin.In 1939, American pathologist Kenneth Brinkhous showed that people with hemophilia have a deficiency in the plasma factor he later called anti-hemophilic factor. In 1952, Loeliger named this factor VII.

Buenos Aires physician Pavlovsky reported that the blood from some hemophiliac patients corrected the abnormal clotting time in others. In 1952, Rosemary Biggs from Oxford U.K. calls it Christmas disease, named for the first patient, Stephen Christmas. The clotting factor was called Christmas factor or factor IX. Factor XI deficiency was described in 1953 as a milder bleeding tendency.

In 1955, Ratnoff and Colopy identified a patient, John Hageman, with a factor XII deficiency who died from a thrombotic stroke, not a bleeding disease.

Factor X deficiency was described in 1957 in a woman named Prower and a man named Stuart.

In 1960, Duckert described patients who had a bleeding disorder and characteristic delayed wound healing. This fibrin stabilizing factor was called factor XIII.

In the early days, treatment of hemophilia A patients consisted of giving whole blood units to relieve symptoms. Not until 1957 was it realized that the deficient coagulation protein was a component of the plasma portion of blood.

In 1958,Inga Marie Nilsson, a Swedish physician, begins prophylaxis in treatment of boys with severe hemophilia A. Regular prophylactic treatment does not begin until the early 1970s.

The World Federation of Haemophilia was established in 1963. Cryoprecipitate, a plasma derivative, was discovered by Dr. Judith Poolin 1964. This product is produced as an insoluble precipitate that results when a unit of fresh frozen plasma is thawed in a standard blood bank refrigerator. Cryoprecipitate contains fibrinogen, factor VIII, and vWF. This product is extracted from plasma and usually pooled before it is given to the patient according to weight and level of factor VIII. This product presented a major breakthrough for the hemophilia population because it was an easily transferable product affording the maximum level of factor to the individual.

Next in the chronology of treatment products for hemophilia was clotting factor products. These freeze-dried products were developed in the early 1970s. The products were lyophilized and freeze-dried and could be reconstituted and infused at home. This treatment offered the hemophilia population an independence that they had never previously experienced. Finally they were in control because they could self-infuse when necessary and provide themselves with prompt care when a bleeding episode developed.

Another landmark was the recognition by Italian Prof. Pier Mannucci in 1977 that desmopressin (DDAVP) could boost levels of both factor VIII and von Willebrand factor, and this remains a useful option in mild forms of these conditions.

But adark cloud loomed over the bleeding community. Approximately 80% to 90% of hemophilia A patients treated with factor concentrates in the period 1979-1985 became infected with the HIV virus. Factor concentrates were made from pooled plasma from a donor pool that was less than adequately screened. Additionally, manufacturing companies were less than stringent with sterilization methods and screening for HIV virus did not occur in blood banks until 1985. When each of these factors is brought to bear, the tragedy to the bleeding community is easily understood.

According to the National Hemophilia Foundation, there are 17,000 to 18,000 hemophilia patients (hemophilia A and B) in the United States. Of those, 4200 in the United States and about 1200 in the UK are infected with HIV/AIDS. There are no numbers available for wives or children who could have been secondarily infected.

The hepatitis C virus (HCV) was first identified in 1989, and it soon became clear that an even higher proportion of people with hemophilia had been exposed to this virus. Fortunately, the introduction of physical treatments of

concentrates such as exposure to heat or the addition of a solvent-detergent mixture has effectively eliminated the risk of the transmission of these viruses. The structure of the factor VIII gene was characterized and cloned in 1984. This led to the availability of recombinant factor VIII. Recombinant products became available in 1989 and represent the highest purity product because they are not human derived. Recombinant technology uses genetic engineering toinsert a clone of the factor VIII gene into mammalian cells, which express the gene characteristic. Production expenses for this product are unfortunately the most costly, and these costs are passed on to potential users. Most individuals with hemophilia in the United States use factor concentrates prophylactically.[10]Life expectancy of a child growing up with haemophilia today is comparable to that of someone without a bleeding disorder. In 1998,Gene therapy trials on humans began. In the future, gene therapy is considered a realistic goal.

Conclusion:

To sum up, it's widely clear that the main improvements in understanding the cause and the inheritance type of hemophilia, and the major advances in its treatment was actually done in the last hundred years. In spite of this fact, historians of medicine couldn't deny that Albucasis (Al-Zahrawi) was the first who noticed the disease. We need to reconsider this fact when we try to rewrite the history of hemophilia.

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Journal of the British Islamic Medical Association

History

Vol 11 - No. 4 | August 2022 | www.jbima.com

Overview of the Health System in Jerusalem during the Ottoman Rule

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Keywords: *Islamic bioethics, Informed consent, Porcine mesh, Hernia repair, biologic mesh, Muslims*

Introduction

Medicine and surgery were always present in Palestine since the ancient times, in the Pre-Islamic era , Hyrcanus I (from the Maccabean Hasmonean period 104-175 BC) founded what looks like a hospital in the city of Jerusalem. (1)In the Islamic era (638- 1917 AD), the medical sector in Palestine flourished, and many hospitals and Bimaristans were established which shows how crucial healthcare was to the Muslim ideal. Other examples of Islamic rule's positive impact on the health sector in Palestine include the Umayyad era; perhaps the most famous person who worked in medicine was named Khalid bin Yazid bin Muawiya who was known for lecturing in the courtyard of the rock in Jerusalem. During the Abbasid era, a number of doctors became famous in the cities of Ramle, Ashkelon and Tiberias , such as Paul bin Hanoun. The Ayyubid era then witnessed the creation and founding of many healthcare facilities such as the Salahi Bimaristan in Jerusalem. During the Mamluk era, interest in the development of the healthcare sector Palestine increased significantly even after the fading of the Crusades (2). Furthermore, the health care system improved greatly during Ottoman rule in Palestine, and many hospitals were founded like Baladiyah hospital in Jerusalem. This era is characterized by the prosperity of hospitals for foreign missions, especially in the Holy City for example: the Russian Hospital, the Hospice Hospital, the English Hospital and the German hospital (3).

During the Israeli occupation however, the healthcare sector is struggling (as are all sectors) due toalack of resources caused by the Israeli government'ssiege and obstructionist policies against the Palestinians (4).

Improvements in the infrastructure of the health system in Palestine during Ottoman rule:

The Ottomans took care of the bimaristans that were established in Palestine during the Islamic era and increased their endowments. Bimaristans are public hospitals where internal, rheumatic, mental diseases are treated, surgical operations are performed and where treatment is carried out by specialized medical staff. Among these bimaristans are the Fatimid bimaristan in the city of Jerusalem, the al-Salahi bimaristan in Acre (Akka city), the al-Mansuri bimaristan in Hebron, the Gaza bimaristan, the Ramlabimaristan and Nablus bimaristan (5).

These bimaristans are still remembered to this day due to their activities and positive impact on the community.

The Ottomans also established new healthcare facilities in Palestine, for example the Baladiyah Municipal Hospital in Jerusalem.This hospital was established in 1891 AD, during the reign of Sultan Abdul Hamid II in Jerusalem. It was a two-story building with 28 rooms and 40 beds. The hospital staff consisted of 13 nurses, and an imam who represents the municipality administration and serves as the hospital secretary. The chief physician was a Greek named Photios Avclides and was assisted by the Jerusalemite physician Kamel al-Husseini. The hospital was provided with an equipped operating room, and a pharmacy that contained all the medicines known at the time. This was considered cutting-edge for the era and meant that patients received the best care possible(1).

Furthermore, a few other specialty hospitals were established in Palestine during this time in response to new epidemics, wars, and new medical science such as the Ophthalmology Hospital (St. John's hospital 1882 AD) in Jerusalem. Eye diseases were a particular challenge; they usually broke out in early spring, and lasted throughout the summer. It seems that key factors in the prevalence of eye diseases were a combination of unsanitary conditions, primarily the lack of bathing water under crowded living conditions, and a hot and dry climate which encourages the spread of microbes. And while modern pharmacies, clinics, general and professional hospitals spread rapidly in Jerusalem beginning in 1830, it was not until 1882 that the first hospital specializing in eye diseases was founded in Palestine, in Jerusalem. The intricacies of eye diseases meant that treating them was far from straight-forward though the creation of the eye hospital demonstrated how seriously these diseases were taken; and how they required specialist knowledge and research. The founders of the hospital; were members of the Order of St. John and until the official building was completed, the mission was housed in temporary quarters (6).

Health care personnel training system:

In this era,medical schools were established in the Islamic world, in which teaching was performed by two methods:

(1) The theoretical method in the medical schools.
(2) The practical method for training and practice where students gathered around the chief doctor to see and examine the patients and the treatments he prescribed.

When the students finished their period of study, they applied for an exam, took an oath and received their certificates. When they started to practice medicine, they always worked under the state's supervision. This means of course that bimaristans were institutes for teaching medicine and to complete the study and training for junior doctors; similar to teaching hospitals in the UK today which teach medical students through their supervision of placements.

From a practical point of view, the professors prescribed the treatment for the patients and examined them in the presence of the students. They performed these instructions in an organized way and they ran a follow up for the patients, hence they acquired the necessary practical experience needed for a medical student.

The system also disqualified healthcare workers who were deemed to be unsafe to practice if proven so to protect the public which is similar to how doctors can be struck off if found to be putting a patient at risk.(7)

Healthcare system management and finance

The executive management of the healthcare facilities in the era of the Ottoman empire was based centrally and was represented by the judge (the mayor) in each country. The judge would recruit local managers to the healthcare facilities who mostly included imams as an administrator and secretary. The local managers were expected to create a financial plan to cover the running cost of the facilities and were funded by the endowment's money. The physicians' union in Jerusalem was established in the 17thcentury too. (8)

Challenges and the end of an era:

Palestinians were subdivided into three major ethnic groups, according to their patterns of life. These posed certain challenges. The categories were as follows: The urbanized (*hadar*), the peasants (*fallahin*), and the Bedouin tribes (*badu*). The degree of reliance on traditional medicine has always varied between these groups. In the period under study, dependence on traditional medicine was greatest amongst the nomadic Bedouin, followed by inhabitants of small rural villages on the periphery, due to both strongly rooted traditional values and the lack of access to any alternative treatment methods. This meant that the Peasants and the Bedouin groups suffered from poor health in general due to diseases and environmental health conditions, a lack of public health education, inadequate hygiene,

malnutrition, malarial mosquitoes and other parasites more than the Urbanized group, which lead to the spread of disease and late presentations to the city hospitals.(9)

In the nineteenth century, Palestine, then a part of the Ottoman Empire, was a good place for pathogens. On several levels, circumstances were conducive to illness and disease. The geography did not provide an easy living, comprising a relatively small area with both swamps and deserts and a very high population density in the areas that were inhabited meaning disease could spread rapidly from one person to another. It was on the Islamic pilgrims' path on their way to and from Mecca that there was such a great risk of contracting disease.

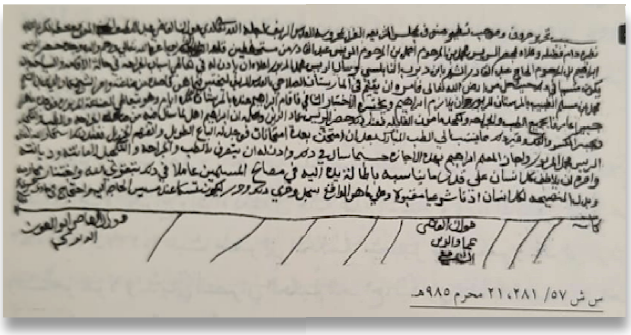
Wars, poverty, backwardness, ignorance of the local elite and the frequent incompetence and indifference of the central government and the resulting lack of effective social administration further prepared the ground for an easy spread of diseases. Thus, the region was frequently struck by epidemics, particularly malaria. Central government and local administrations wouldn't learn from their mistakes so the same epidemics would continue to strike.

On the other hand, the weakness of the central Ottoman system in general towards the end of the Ottoman rule in Palestine affected the health sector negatively, mainly due to management corruption. As the "Sick Man of Europe" the Ottoman Empire was crumbling in its final decades and in some ways was failing to administer basic government functions.

The demise of the Ottoman Empire at the end of the First World War produced a temporary power vacuum which attracted various groups interested in the area. Several colonial powers strove to extend their spheres of influence, the politically active class of the Arab population expected independence and an international Jewish community hoped to build a national home on the ground of the Jewish state of antiquity. Such political instability was not ideal for an already struggling healthcare system, and unfortunately, occupied Palestine is still suffering from poor healthcare system to this day. (9)

Photos about the Palestinian Bimaristans during the Ottoman era :

Baladiyah hospital in Jerusalem (Baladi Bimaristan) which was established in 1890



A certificate of Medicine and Surgery license to practice

Medical staff in the Baladiyah hospital in Jerusalem

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Journal of the British Islamic Medical Association

Advocacy

Vol 11 - No. 4 | August 2022 | www.jbima.com

BIMA: Media Usage and Response During the COVID-19 Pandemic

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Introduction

A strong body of research suggests that Muslims are represented within a predominantly negative framework in UK's mainstream media (Poole and Williamson, 2021). The anti-Muslim undercurrent within Western societies is strengthening, with media filtering information to selectively portray Muslims as a threat to the nationalist project, perpetuating the processes of "othering" and stigmatisation (Baker, Gabrielatos and McEnery, 2013). The COVID-19 pandemic provided further opportunity for this negative portrayal ranging from unsubstantiated conspiracies of "Muslim mass graves," to blaming Muslims for the spread of the pandemic. This followed the unprecedented notion that Muslims "won't follow our rules," highlighted by politicians within mainstream media(Muslim Council of Britain, 2020, Poole and Williamson, 2021).

Furthermore, The Office for National Statistics (ONS) reported that Muslims had the highest mortality rate when compared to other faith groups, with Muslim men 2.5 times more likely to die than their Christian counterparts(Office for National Statistics, 2020). However, the burden of the pandemic and adverse reality Muslims were subjected to was largely obscured within mainstream media and ignored in public discussions(Poole and Williamson, 2021).

An examination of UK newspaper coverage of Muslims during the pandemic suggested that this further supported a framework in which the identifier of being "Muslim" is irrelevant unless it signifies "difference" (Poole and Williamson, 2021). This "othering" was further supported by prejudiced comments made by politicians. For example, Craig Whittaker MP stated that "BAME and Muslim communities did not take the pandemic seriously" (Muslim Council of Britain, 2020). This is merely one example of several statements and headlines that propagated the negative portrayal of Muslims during the pandemic.

This brings forth the role of the British Islamic Medical Association (BIMA) during this unprecedented time. BIMA is an internationally recognised organisation of over 5000 members, that aims to support and represent Muslims within the NHS, alongside promoting a better understanding of Islam to non-Muslims. BIMA works to bridge the understanding of Muslim patients within the wider healthcare system as well as facilitating support and advocacy for it Muslim healthcare professional colleagues.

Through its engagement with the Muslim community, the organisation aided the implementation of several volunteer initiatives that provided support for the pandemic effort. These initiatives, alongside the provision of culturally and faith-specific guidance and interventions specifically catered to the spiritual and physical needs of the Muslim community. By working within the NHS, BIMA was able to simultaneously enable recognition from non-Muslim stakeholders including Governmental agencies, national and international media outlets as well as local healthcare organisations who were aiming to engage with the

communities in a similar space. It is through this recognition, alongside the engagement of those stakeholders, that a positive voice was established for Muslims in media representation. A voice that has historically been underrepresented, or even non-existent.

BIMA's engagement with the Muslim Community:

Through utilising the tools of media, focused initiatives and interventions catering specifically to the Muslim community, including culturally appropriate and linguistically specific faith-based guidance, was communicated nationally.

This included specific statements outlining BIMA's support of the COVID-19 vaccinations. Research suggested that many UK Muslims, particularly from ethnic minority backgrounds, were at greater risk of COVID-19 related complications, but also tended to be more vaccine hesitant. Through reviewing multiple schools of thought and medical opinions, BIMA produced position statements highlighting why the Moderna, Pfizer and AstraZeneca vaccines were both medically and spiritually compatible (for eligible individuals). This included statements pertaining to the contents of the vaccine, such as the use of alcohol or animal products, alongside why this was particularly important for the Muslim community.

Furthermore, by building on the BIMA Rapid Ramadan Review conducted in 2020 in light of the pandemic, BIMA produced a compendium to assist both health-care professionals and Muslim patients in making medical decisions during Ramadan. This included informative recommendations relating to common medical conditions, those who may consider fasting, those who should not, alongside how best to manage their condition whilst fasting. Furthermore, questions regarding the uptake of vaccinations and parenteral forms of medication whilst fasting were also addressed within these guidelines (British Islamic Medical Association, 2021).

In collaboration with the Muslim Council Britain (MCB), BIMA also led on the formation of Covid Response Groups since the beginning of the pandemic(Muslim Council of Britain, 2020). UK Government guidance was adapted to the specific needs being faced by the Muslim community. These projects included communication of key adaptations that were required to facilitate Muslim practices including communal prayers, adaptation of janazah arrangements as well as provided key information regarding how to manage hospital admissions.

Furthermore, BIMA utilised media to showcase how the Muslim community was supporting the pandemic national response, such as the collaboration between Masjid Ghousia and the NHS in creating a 60-bed unit in the mosque, open to all, to relieve some of pressure that the NHS was facing (Muslim Council of Britain, 2020).

Overall, it is through media and stakeholder engagement that BIMA was able to efficiently support, encourage and educate the Muslim Community during the pandemic.

Furthermore, it is through media engagement that the work of BIMA has been recognised by its non-Muslim affiliates, enabling a platform by which Muslims can be further represented and advocated.

BIMA's engagement with the non-Muslim community:

BIMA considers its engagement with non-Muslim stakeholders to be hugely important as it allows a voice of representation within national media. Furthermore, raising awareness of the Muslim community has enabled the provision of greater support by the state to cater to the specific needs of Muslims.

For example, it is through forming relationships with non-Muslim stakeholders that the pioneering Academic research established in the Ramadan Compendium was shared nationally by Royal Colleges, NHS societies and MP's(Muslim Council of Britain, 2020). In Ramadan 2022, the Secretary of State, Rt Hon Sajid Javed also referenced the compendium in his Ramadan message.

Furthermore, through BIMA's discussions with the royal colleges, the provision of "disposable hijabs" was implemented across NHS trusts nationally(British Islamic Medical Association, 2020).

Overall, through using media to engage with the Muslim community, BIMA has been recognised and formed strong relationships with its non-Muslim counterparts. It is these relations that have enabled a voice of representation for Muslims, beginning to break the negative biases that have historically consumed mainstream media.

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Journal of the British Islamic Medical Association

Relief

Vol 11 - No. 4 | August 2022 | www.jbima.com

Reflections from my Experience Volunteering in East Africa

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Introduction

In late 2021 I embarked on an out-of-program opportunity as a visiting lecturer in anaesthesia at the College of Anesthesiology, Addis Ababa University. During my placement I had to evacuate the country due to the civil war in Ethiopia and spent two months in Rwanda. There I continued clinical teaching at a government hospital in Kigali. In this article I present four reflections from my exposure to developing world medicine in East Africa.

Main reflections from my Visit:

1) Quality Improvement as an integral part of productive global health partnerships :

The remit of my placement was clinical teaching, but frequently I found myself wondering what I could offer trainees in Addis Ababa who were very skilled and very well read, and whose only limitations stemmed from the severe lack of basic equipment. I therefore dedicated one afternoon a week to Quality Improvement (QI) teaching. The Ethiopian Ministry of Health published some guidance in 2020 setting out an ambition to improve QI literacy amongst its institutions. In my view, this did not translate to the frontline practice within the anesthesiology department where familiarity with QI was limited. I provided teaching on QI tools and techniques, mentored several teams on department-selected priority QI projects and witnessed some excellent results.

One team looking at postoperative hypothermia used QI tools to map the causes of heat loss in theatre and ran three Plan-Do-Study-Act cycles.

The results which will be published elsewhere demonstrated a median improvement of around one degree Celsius using equipment easily available in the department. Reducing peri-operative hypothermia is known to reduce complications like delayed waking, surgical site infection, and delayed wound healing. Wins in this area are likely to have the knock-on effect of improving patient recovery, reducing inpatient stays and increasing throughput.

The early success of this and other QI projects was stark and gave pause to reflect on what a good model would be for UK based trainees to help clinicians meaningfully improve patient safety abroad.

While opportunities for clinical teaching abroad are commonly offered to UK trainees, are there other models for those wanting to create real and lasting change in the developing world? From my limited experience, QI partnerships might be one solution that combines teaching and tangible improvements to patient care.

2) Bridging the waste and want gap

I occasionally witnessed patient harm, and it was always due to resource poverty. I recall a toddler who sustained a large iatrogenic broncho-pleural fistula (BPF) during airway foreign body retrieval when suitably sized equipment was unavailable. Correcting this BPF required anaesthesia with lung isolation. No equipment was available to facilitate this, and the child suffered prolonged hypoxia until the bronchus on the affected side was clamped. In these kinds of scenarios, the clinicians do the best they can with the equipment available, but there is a ceiling beyond which clinical skill and knowledge cannot go, even to save a life.

Equipment shortages were not limited to specialist equipment. For a few months in one hospital most adult thoracic surgery could not be done due to the absence of double-lumen endotracheal tubes.

In both countries, to minimise the impact of equipment shortages, single use airways are commonly washed in a basic chlorine solution, or simply in soap and water, and reused over and over until their integrity is compromised. During an airway emergency, I recall running to multiple operating theatres trying and failing to find an oropharyngeal airway (OPA) for a hypoxic patient with unexpected difficult mask ventilation. In the UK it would be unimaginable to even start a case without a selection of different sized OPAs being available.

This is in grotesque contrast to the practice in parts of the UK where single use equipment is sometimes opened 'just in case' and discarded unused.

There is a safety argument for this sort of practice where the situation can deteriorate in seconds and equipment needs to be in hand immediately, but there must be a way to close the gap between the wastage in the UK and the needs of the developing world.

My reflection centres around what systems already exist to minimise this waste, and how to recycle unused equipment which would otherwise be destined for disposal. Bridging this waste and want gap could allow those excellent clinicians in the developing world to provide excellent patient care, reduce own industrial waste and reduce our impact on the environment.

3) The contrasting attitude to faith in the workplace

I recall attending morning handovers in Kigali where the entire department would stand for a Christian prayer for the success of the day and for the health of the patients. Orthodox crucifixes are worn proudly around the necks of most clinicians in Addis Ababa, while the rest wear hijab or excuse themselves to pray in their office at lunch time. Traditional Christian hymns were played in many operating rooms. This contrasts with my experience in the UK where visible demonstrations can be viewed with suspicion.

The intersection of faith and health however was not always harmonious.

I recall a two-year-old admitted for repair of an inguinal hernia whose body was covered in scars (figure 1). It was explained to me that the family had eschewed medical treatment in favour of traditional healers or 'witch doctors' who performed scarification to treat the hernia. In this case however the toddler had become malnourished and experienced a great deal of pain in his life. I engaged with the surgical team and learnt how traditional healing is viewed and accessed in the city compared to rural villages.

I discovered that traditional healing for minor ailments was not uncommon and in fact, some of the clinicians I worked with admitted to using witch doctors from time to time. However, because of the harm occasionally experienced by patients, educational programs in the rural countryside were set up to modify people's approaches to seeking treatment for their health problems (see the Figure 1 as an example of a practice of scarification to treat inguinal hernia) .

It was my experience as a Muslim living in the west which made it possible to observe these practices without judgement; I drew parallels with Prophetic medicine and how therapies like cupping, which are accessed by many sections of the UK's Muslim community, attract suspicion from the wider medical community.

The challenge for me in my remit as a clinical lecturer was to experience the cultures without criticism or judgement, neither of which were invited, nor would have been helpful.

4) Enormous personal gain for trainees willing to 'just do it'

I travelled to Addis Ababa in the midst of a pandemic with my supportive wife and three young children, with whom I subsequently had to evacuate for Rwanda due to the threat of civil war in Addis Ababa. I get asked if I would do it all again and reply in the affirmative. The experience was transformative for many reasons.

For one, the cultural learning has positively changed some important lifestyle habits. Ethiopia follows Orthodox Christianity and adherents observe a vegan fast twice a week; with halal meat difficult to access, this impacted the food my family ate, massively reducing our meat consumption. Local produce was vibrant, abundant and cheap, and vegan cooking was nutritious and

seasoned with sophisticated Ethiopian spice mixes which kept everyone satisfied including the children.

Our family had a rapid education in gratitude. Seeing children young as four years old begging or working in the streets on a daily basis had the undeniable effect of providing perspective during domestic challenges. My children still sombrely recall the street children who would shine the shoes of, or weigh, passers by to generate an income.

The list of transformative experiences and observations could go on and on; the people on Rwanda were particularly generous, Kigali was beautifully landscaped, the wildlife in Rwanda which includes 'the big 5' is experiencing a major resurgence making for excellent short breaks, Rwanda has the world's only mountain gorillas, civic regeneration in Addis Ababa would make any major world capital city planner green with envy, the ancient Habasha culture of Ethiopia still impacts major facets of daily living, and so on.

While the decision to leave the comforts of the UK and immerse oneself in the developing world should not be taken lightly, the reality of the sociopolitical aspects means it cannot be easily and accurately risk assessed, and there is a leap of faith required at the beginning of such a placement. Instead of a leap of faith, a Muslim might say they have tied their camels and are leaving the rest to the Creator. Would I do it again? I look forward to it.

Conclusion

My experience of developing world medicine was a valuable life lesson and has made me more grateful for our National Health Service. I was shocked at the degree of resource poverty I witnessed at the countries' largest government hospitals and the impact of that on patient safety and harm. There are many ways UK based clinicians can help improve patient safety in the developing world. Gifts of expensive technology are not one of them; rooms full of equipment sitting idle in need of service or repairs, neither possible locally, were testament to that. Instead, collecting clean single use equipment otherwise destined for disposal could offer one solution, and education programs in QI, systems and process improvements could be sustainable and inexpensive way to continually improve care and outcomes in the developing world. There is enormous mutual benefit in continuing these sorts of partnerships and I would encourage any UK trainee considering time abroad to take that leap for a truly paradigm shifting experience.

Figure 1 : Scarification to treat an inguinal hernia

Journal of the British Islamic Medical Association

Book Review

Vol 11 - No. 4 | August 2022 | www.jbima.com

Anatomy of the Eye, Its Shape and the Treatment of its Diseases

By Ali Ibn Ibrahim ibn Bakhtyashu Al-Kafartabi

Reviewed by:

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The first historian to bring the book and its author to the ophthalmological community was the late ophthalmologist, historian, researcher and Orientalist professor Max Meyerhof in the introduction to a book he edited, translated into English, and published in Cairo, Egypt in 1928[1]. Prior to that, in 1927, he translated parts of the book into German[2] .

The book and its author were not given any attention by biographers such as Usaibia'a and Al-Zirkly, perhaps because he was born and raised in a very small town called Kafartab, located between Aleppo and Maarat Al-Nu'Aman northwest of Syria, or maybe because he travelled extensively to Egypt and Yemen as mentioned in the book. The reason may also be because he did not limit his practice to the management of eye diseases.

The author did not have official training under any renowned oculist or ophthalmologist, but he mentioned several times in the text that he read several compounded prescriptions from his father, and he observed his father using some ointments to treat certain eye diseases. Besides that, he mentioned throughout the book that his father was a skillful physician and oculist, and that could be the reason he did not gain a reputation or fame in that field.

The Bakhtyashu Family:

The author is a descendant of a very prominent and reputable family of Assyrian physicians who originally trained in what may be the very first medical training facility of its time, named Jundisabur,in the southwestern part of Persia.

The first famous physician in the author's family was Jorjis Ibn Bakhtyashu (D 155AH=772CE), who headed the Bimarstan in Jundisabur until he was summoned by the Khalif Al-Mansour in Baghdad to be his private physician.

Then came his son Bakhtuashu Ibn Jorjis to serve as Khalif Haroon Al-Rasheed's private physician until his death (184AH=800 CE). He had two sons who were very prominent and skillful physicians, and all served in the courts of the Abbasid khalifs.

Gibrail ibn Bakhtyashu ibn Jorjis (D213AH= 828 CE)served Khalif Haroon Al-Rasheed. Yuhanna Ibn Bakhtyashu Ibn Jorjis (D290AH= 903 CE) who was a great translator from Greek and Syriac languages into Arabic. Then came their sons who inherited the trade and gained the skill and the reputation of their ancestors.

[1]Max Meyerhof, MD.
Ten Treatises on the Eye
Hunayn Ibn Ishaq Al-Abadi (D264AH=875CE)
Edited and translated into English
Published by: Al-Amiriyah Press. Cairo, Egypt 1928. P.XIV.

[2]Max Meyerhof,MD. Eine Unbekannte Arabische Augenheilkunde des 11 jahrhunderts n. Chr. In Archivf.Geschechte der Medizin Vol. XIX 1927, P 63-79.

Bakhtyashu Ibn Gibrail ibn Bakhtyashu Ibn Jorjis (D 256AH=870 CE) who served Khali Al-Mutawakkel. Bakhtyashu Ibn Yuhanna Ibn Bakhtyashu (D325AH= 937 CE) who served as a private physician to Khalif Al-Muqtader. Gibrail Ibn Ubaid Allah Ibn Bakhtyashu (D396AH= 1006 CE) who served Khalif Adud Al-Dawlah before he travelled to Egypt for a few years, then back to Baghdad where he died[3].

His ancestry can be traced to very reputable private physicians of several Khalifs, several centuries before his time. However, for unknown reasons, he was not as reputable, or perhaps not as fortunate, as his ancestors.

About the manuscript:

As far as we know, there is only one manuscript of this book in Leningrad, copied in 551 AH=1156 CE, less than one hundred years after the author's death. The Cairo copy is a handwritten copy of the Leningrad copy that was brought by the late Max Meyerhof in 1930. We are grateful to the Cairo National Library for providing us with a microfilm of the manuscript and regret not being able to obtain a copy of the Leningrad manuscript despite all the efforts made.

We edited, corrected, updated, and added fifteen anatomical colored illustrations and five appendices (supplements) as follows:

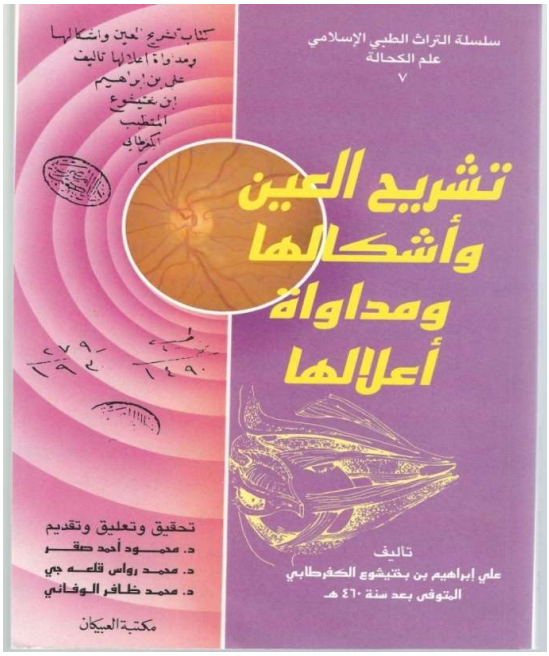
1- A bilingual (Arabic-English) list of the simple medications with the references.
2- The second appendix contains a list of the compounded medications classified according to their pharmacological shape (Kuhl, ointment, powder etc.)
3- In the third appendix, we listed in alphabetical order all the medical terms in Arabic with their English translations.
4- In this fourth appendix, we listed the English medical terms with the Arabic translations.
5- In the fifth appendix, we put a collection of fifteen anatomical illustrations with the Arabic names of each part, with emphasis on the ocular anatomical names.

[3]Read about this family of scholars at: Al-Aalam: Khair Al-Din Al-Zirkly, Dar Al-IlmLilmalayeen, Beirut, Lebanon. Tabaqat Al-Atibbaa: Ibn Juljul. Uyoon Al-Anbaa fi Tabaqat Al-Atibbaa: Ibn Abi Usaibiaa. Dar Al-Hayat, Beirut, Lebanon 1965.

The book:

Although the author did not add anything new or original in his book, he studied the anatomy of the eye and its adnexa very carefully and with reasonable details. In addition to that, he wrote extensively about the simple and compounded medications. Occasionally, the author confuses the reader by describing the diseases of some parts of the eye, e.g. the lens, and suddenly changes the discussion to the cornea or the vitreous diseases and then again to the diseases of the lens (page 12 of the manuscript). In addition, the author failed to mention the treatment of the aqueous humor, the lens, the vitreous and the visual spirit, and he failed to mention the diseases of the optic nerve and the retina, the choroid and the extraocular muscles. This could be because he wanted to remain focused on the topic of the title, Anatomy of the Eye. The most notable thing about the author is that he emphasized preventing the general practitioner from performing any eye surgery unless he had spent enough time with an expert oculist as an observer or an assistant, and he had practiced on animal eyes to gain enough experience and skill in the field.

In conclusion, we admit that this book does not rise to the level of any other books on ophthalmology written by his contemporaries, but it certainly was the first book in the history of mankind dedicated to the anatomy of the eye and its adnexa. The book was edited by: Mahmoud Ahmad Saqr, M. Rawwas Qalaaji, and M. Zafer Wafai. It was published by: Al-Obeikan Publishing House, Riyadh, Saudi Arabia. 1991.



Journal of the British Islamic Medical Association

Book Review

Vol 11 - No. 4 | August 2022 | www.jbima.com

Healing with the Medicine of the Prophet (pbuh)

By Imam Ibn Qayyim Al-Jauziyah

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Introduction

Written in the fourteenth century, 'Healing with the Medicine of the Prophet (pbuh)' is a veritable encyclopaedia of prophetic medicine. The book seeks to compile the Prophet's (pbuh) guidance regarding various health issues. From specific cures and treatments to the prophetic etiquette of eating and drinking to guidance on enforcing quarantine, it is evident that such guidance continues to be highly beneficial and relevant to Muslims and non-Muslims alike.

Before proceeding with the review, it is incumbent upon us to place the text in its historical context and offer up numerous important caveats.

The text was written over 650 years ago by Imam Ibn Qayyim Al-Jauziyah, a student of Ibn Taymiyyah. He was an important medieval Islamic theologian and jurisprudent with an extensive contribution to Islamic jurisprudence and commentaries. The book has since been translated from Arabic into English by Imam Jalal Abualrub. The usual caveats are as follows.

First, much is lost in translation when a medieval Islamic text is translated for a modern audience. Translation is a difficult science in and of itself. At times, the book has translated a hadith or saying in such a manner that may open debate as to whether the meaning has been correctly conveyed.

Second, as a medieval text, this book does not have the traditional sectioning or narrative as one would imagine. Rather than a contents, one should refer to the comprehensive index at the end of the book which lists the different sections.

In light of these caveats, and the length of the book reaching 653 pages, this review will merely pick out the most interesting and useful guidance presented. The final section of the review will seek to further contextualise certain sections and emphasise the importance of contextual cues in studying the Quran and sunnah.

Specific Prophetic Guidance

For all sections, Ibn Qayyim Al-Jauziyah follows a useful structure. First, he lists the scriptural evidence supporting a particular treatment. Drawing from the Quran, sunnah and contemporaries of the time, Ibn Qayyim Al-Jauziyah seeks to bolster the evidential basis. Second, he explains the benefits of a specific treatment or food from his understanding at the time of writing. This includes the reasoning behind the advice, techniques and further advice.

1) Cupping

Cupping is a well-known treatment advocated by the Prophet (pbuh). Ibn Qayyim Al-Jauziyah compiles a number of hadiths advising the use of cupping as a remedy and a preventative treatment. He further elaborates on the technique and where to perform the cupping to target different types of ailments. The sheer versatility of cupping is evidenced by his explanation that all such ailments may be treated including ailments of the head, face, teeth, ears, eyes, nose, throat, swellings,

headaches and general body pains. Modern scientific research confirms what Ibn Qayyim Al-Jauziyah recorded more than 650 years ago, with research emerging that cupping really does produce all manner of effects including pain relief, anti-inflammatory, immunomodulation and detox effects.

2) Sleep

The book discusses the prophetic guidance regarding sleep routines and positions. The prophetic advice of sleeping on the right side is discussed and the science behind this is further explained. Interestingly, Ibn Qayyim Al-Jauziyah records that "sleeping on the left side regularly harms the heart because the organs of the body will pressure the heart with their weight" and that one of the worst positions is sleeping on one's back and stomach.

Research shows that people suffering from heart failure naturally sleep on their right side and avoid sleeping on their left side. Their echocardiograms show that sleeping on their left side impacts the function of the heart and may cause discomfort[1]. While experts are unanimous that sleeping on one's stomach causes back pain because the position does not support the curve of the spine.

3) Mental health and bedside manner

The book records the hadith of the Prophet (pbuh) stating that "when you visit a sick person, say good words to him, for the sake of Allah for although that does not prevent any harm, it still brings relief to the patient's heart" (Al Tirmidhi).

Ibn Qayyim Al-Jauziyah explains that this hadith contains "one of the most honourable remedies, that is, relieving the anxiety of the sick with some good words that will enhance his resolve and strength". He explains the link of relieving the anxiety of a sick person to curing the body and lessening the effects of an ailment. The book also records the hadith of the Prophet asking a sick person what he has a taste for and following this by advising "when yours sick have a taste for something, give them some of it".

The book's emphasis on the Prophet's compassion towards the ill and his awareness of the link between mental and physical health is particularly enlightening from a Western medicine perspective. The link between physical and mental health has only emerged within western medicine over the past few decades. While the drive behind good bedside manner is relatively new; British doctors may be aware of Dr Kate Granger's laudable "hello my name is" campaign for compassionate care and basic communication[2]. In light of this, it is especially interesting to observe how prophetic medicine explains how one's bedside manner affects a patient's mental and physical health.

4) Specific foods

From page 359 onwards, an alphabetical listing of specific foods begins. This section is particularly enlightening for the reader looking for prophetic guidance on specific foods. The following is a brief overview of the most discussed foodstuff:

Black seed oil: the widely cited hadith concerning black seed oil being a cure for every type of ailment except death is quoted. The book also advises specific mixtures and applications depending on the type of ailment. Such commentary is especially useful in understanding just how comprehensive medieval Islamic medicine was.

Figs: Imam Ibn Qayyim Al-Jauziyah notes that figs help with liver and prostate health and that they relieve the "roughness in the chest, throat and trachea". Modern evidence supports these comments.[3]

Fenugreek: the book records a hadith where the prophet advised an ill person to take fenugreek. Once again, Ibn Qayyim Al-Jauziyah notes specific mixtures and applications depending on the type of ailment. He specifies that it helps relieve coughing, drying, asthma, dandruff and other matters.

1Leung RS, Bowman ME, Parker JD, Newton GE, Bradley TD. Avoidance of the left lateral decubitus position during sleep in patients with heart failure: relationship to cardiac size and function. J Am CollCardiol. 2003 Jan 15;41(2):227-30. doi: 10.1016/s0735-1097(02)02717-1. PMID: 12535814.

2https://www.hellomynameis.org.uk

[3]Mawa S, Husain K, Jantan I. Ficuscarica L. (Moraceae): Phytochemistry, Traditional Uses and Biological Activities. *Evid Based Complement Alternat Med.* 2013;2013:974256. doi:10.1155/2013/974256

Conclusion

A number of observations will follow:
First, this book is truly a panacea for all such ailments, incorporating alternative and traditional medicine. The reader should begin by flicking through the index and glancing through the alphabetical listing of specific foodstuff. The reader will find it difficult to find a herb which will not target a specific ailment. Interestingly, most explanations and treatments mentioned by Ibn Qayyim Al-Jauziyah can be supported by modern research.

Second, the book perfectly captures the beauty of the Islamic tradition. In all aspects of our lives, prophetic guidance emphasises that one must pray and trust the Divine plan whilst also taking action. As the oft-cited hadith goes, one must 'tie one's camel' and then trust Allah, meaning that one must take active action while also relying on God's plan. This applies within the medical setting. For each section, the book reports specific prayers one may recite for an ailment, and this is followed by the actions one must take. Moreover, the book cites the prophetic guidance on seeking the best doctors and requiring compensation from those unqualified to practice medicine. Such advice merely evidences that Islam is a way of life and takes a holistic approach in adopting both alternative and traditional medicine.

Third, this 653-page book has a limited aim of conveying the prophetic medicine. It does not aim to analyse the fiqh or explanations behind specific hadiths or Quranic verses. At times, Ibn Qayyim Al-Jauziyah does not mention the specific context behind a hadith and extracts a rule from the hadith. As we know, context is absolutely vital when reading hadiths and interpretations of hadiths vary. The reader should keep this in mind. Ibn Qayyim Al-Jauziyah's interpretation is only one of many. One must also be reminded that this is a medieval text and certain sections may be seen as controversial from a modern perspective.

Fourth, to obtain the benefits from this book, one must retain an open mind. As aforementioned, occasionally the text does not translate well into English. Moreover, the modern medical vocabulary we have grown accustomed to is of course not present in a medieval text. Therefore, at times, one may read a section of Ibn Qayyim Al-Jauziyah's explanation of how a specific substance benefits the body and consider that this may be an 'old wives' tale' or merely a myth because of the simplicity of language. However, once one researches the benefits of a specific foodstuff or treatment, one will discover that the explanation offered in modern research adheres to Ibn Qayyim Al-Jauziyah's explanation from 650 years ago.

An important lesson emerges from this. As doctors in the West, we can often look down on ancient remedies or alternative medicine techniques as inferior to Western medicine and merely 'old wives' tale'. This book serves as a constant reminder that we are often catching up to the knowledge of our Islamic tradition and its teachers, the best of which was the Prophet (pbuh).