CONTEMPORARY TOPICS IN ISLAMIC MEDICINE

Dr. Mohammed Ali Albar
M. B. B. ch, D. M., FRCP (London)
Consultant of Islamic Medicine
And Consultant Physician (Jeddah)

Forward By

Dr. Isam Ghanem
LL. B, FB, i, M, M. Phil Ph.D. (London)

Sandi Publishing & Distributing House

Contemporary Topics In Islamic Medicine

Dr. Mohammed Ali Albar M.B.B.ch, D.M., FRCP (London)
Consultant of Islamic Medicine And Consultant Physician (Jeddah)
Forward By Dr. Isam Ghanem LL.B, FB,i,M, M. Phil Ph.D. (London)

Saudi Publishing & Distributing House

Founded in Jeddah - Saudi Arabia, July 1966 G.

King Fahd National Library Cataloging

Al-bar, Mohamed Ali
Contemporary Topics in Islamic Medicine 1st ed.
176 p., 14 x 20 cm.
ISBN: 9960-26-011-9
1. Islamic medicine. I. Title
214.61 de

Legal Deposit no: 0929/16
ISBN: 9960-26-011-9

Saudi Publishing & Distributing House

Jeddah

H. Office : Bughdadia, Al-Jawhara Building
Tel: 6424255/6424043/6449192
Fax: 6432821
P.O.Box: 2043 Jeddah 21451
Cable: «NASHER DAR»

Book-Shops: * 1. King Abdel-Aziz Street
Telephone: 6478723
* 2. Palestine Street, Zouman Center, Tel: 6608964

Dammam

Dhahran Street. Near Emara
Tel: 8347769/6947837
Fax: 8335520
P.O.Box: 899 Dammam 31421
Cable: «NASHER DAR»

Riyadh

6 Al-Zafir Street, Olaiya District
Tel: 4647448 Fax: 4647441
P.O.Box 2999 Riyadh 11461

List of Contributors

1 - Dr. Assouli SPH.d. Head of Department of Biology. Faculty oF Medicine, king AbdulAziz University. Jeddah.

2 - Dr. Khalid Amin Mohammed PH.d. Virology. Assist. Professor of microbiology. Faculty of Medicine, king AbdulAziz University, Jeddah.

3 - Dr. Nizamuddin FRCS. Consultant Surgoen, King AbdulAziz G. Hospital, Jeddah.

4 - Dr. Pasha H.S. MRCP, MRCPI. cheif of critical cane unit, King Fahd Armed Forces Hospital, Jeddah.

CONTEMPORARY TOPICS IN ISLAMIC MEDICINE

Forword - (Dr Isam Ganem)		I
CHAPTER ONE	ORGAN TRANSPLANTATION - AN ISLAMIC PERSPECTIVE	3
CHAPTER TWO	THE PROBLEMS OF ALCOIIOL DEPENDENCE ANDITS SOLUTION IN ISLAM	13
CHAPTER THREE	SOCIO - MEDICAL PROBLEMS RELATED TO ALCOIIOL CONSUMPTION	21
CHAPTER FOUR	SOME MISCONCEPTIONS REGARDING THE HAELTH PROCURING PROPERTIES OF ALCOIIL	31
CHAPTER FIVE	AIDS PREVENTION: AN ISLAMIC APPROACH	43
CHAPTER SIX	ISLAMIC MEDICAL JURIPRUDENCE OUTLINE OF SYLLABUS	55
CHAPTER SEVEN	A STUDY OF LEPROSY ALLADITH THE LIGHT OF MEDICAL KNOWLEDGE	61
CHAPTER EIGHT	CORROBORATIVE STUDY OF CONTACION LLADITHS SAYINGS OF THE PROPHET	69
CHAPTER NINE	INFECTIOUS DISEASES TRANSMITED FROM PIGS TO MAN VIRALAND BACTERIAL DISEASES	83
CHAPTER TEN	NON - INFECTIOUS DISEASES ASSOCIATED WITH PORK DIET CONSUMPTION	91
CHAPTER ELEVEN	BREAST - FEEDING AND ISLAMIC TEACHINGS	103
CHAPTER TWELVE	THE IMMUNOLOGY OF HUMAN MILK AND ISLAMIC TEACHINGS FOSTER - KINDER - a corroborative study	115
CHAPTER THIRTEEN	THE UTERINE CYCLE AS DESCRIBED IN THE HOLY QURAN	123
CHAPTER FOURTEEN	MENSTRUTION IS A VULNERABLE PERIOD	127
CHAPTER FIFTEEN	WHEN IS THE SOUL INSPIRED?	131
CHAPTER SIXTEEN	SOME ASPECTS OF GYNAECOLOGY AS EXPRESSED IN THE HOLY QUR'AN	137
CHAPTER SEVENTEEN	ISLAMIC VIEW ON THE HUMAN CORPSE	143
CHAPTER EIGHTEEN	CONTRACEPTION AND ABORTION - AN ISLAMIC VIEW	147
CHAPTER NINTEEN	ETHICAL PROBLEMS RAISED BY THE NEW TECHNIQUES OF HUMAN PROCREATION	155
CHAPTER TWENTY	THE DURATION OF PREGNANCY IN MEDICINE, LAW AND SHARI - AH	161

FOREWORD

Islamic medical jurisprudence is not simply forensic medicine with an Islamic label. This is a point that Dr M. Al-Bar, consultant physician, prominent academic and a pioneer in modern Islamic medical writings, makes clear in this invaluable work – which is based on lectures, papers, and participation in international conferences.

Dr Al-Bar is one of the most gifted and sincere Muslim scientists in the entire Muslim world. I have known him as Secretary General of the Muslim League in Aden, as a professor in Jeddah, and I had the honour to circumambulate with him in Makkah.

His writings in Arabic have been cited by my papers in English, in learned journals on a regular basis as I could find no better authority.

This book has several special features. To start with, it is in English and should, therefore, address a more varied audience.

The work shows why so many writers who are inimical to Islam tried to propagate Ibn Khaldun's doubts over the value of the Prophet's medicine. Dr Al-Bar explains cogently the difference between tuberculoid leprosy and leprosy leonine, and the different approaches by the Prophet to the two diseases from the point of view of pathology. This is an important contribution to Islamic medicine that will endure over the decades.

Dr Al-Bar recommends the setting-up of a committee of specialists to deal with the maximum periods of gestation. He leans towards the views of the Andalusian scholar Ibn Hazm based on the Exegisis of Qur'anic verses. This is another useful recommendation. Dr Al-Bar deals with major professional issues such as organ transplants, abortion, and occupational medicine – e.g., the treatment of alcohol dependence. He draws upon Islamic and international sources.

The book is aptly titled *Contemporary Topics in Islamic Medicine*. It is a milestone in Islamic medical literature that no medical or legal authority can afford to discount, whether Muslim or otherwise.

The King AbdulAziz University in Jeddah is to be commended on its choice of such an eminent scholar as Consultant of Islamic Medicine. But Aden and Yemen have not lost Dr Al-Bar, because his respected writings are widely read in his native Aden, as indeed they are also studied internationally.

It is high time that Dr Al-Bar concentrated more time writing in English as his work is too valuable to remain mainly in Arabic.

I wish to thank Sayyid Akil Shihab, B.Sc. (London) for having given me this opportunity to comment on this valuable work prior to its publication.

Dr. Isam Ghanem,
LL.B., MA, FBIM, M.Phil., Ph.D.(London).

Author of *Comparative Forensic Medicine* (1987), Beirut.
Formerly: Lecturer on Islamic jurisprudence, Ahmadu Bello University, Nigeria;
Lecturer on International Law, Central London Polytechnic;
Company Secretary, Trafalgar House, Dubai;
Management & Legal Consultant, P.O. Box 1241, Sana'a, Yemen.

CHAPTER ONE

ORGAN TRANSPLANTATION AN ISLAMIC PERSPECTIVE

Abstract

The ethical and Islamic jurisprudential views on organ transplantation – an expanding field in many Islamic countries – are here discussed. The Kingdom of Saudi Arabia is playing a major role, both in formulating these views and in implementing them in its organ transplantation centres (eight kidney, one cardiac).[1] In Amman in 1986, the Third International Conference of Islamic Jurists accepted the concept of brain death and equated it with cardiac death. This paved the way for the rapid expansion of organ transplantation projects, especially in Saudi Arabia, the leading Islamic country in cadaveric organ transplantation.

The historical background of the Islamic jurists' views on organ transplantation, the recent Fatwas (juridical opinions) and various decrees of Islamic jurists' conferences, and the underlying Islamic rules regarding transplantation are highlighted. In Jeddah in 1990, the Sixth International Conference of Islamic Jurists addressed new issues and frontiers of organ transplantation – such as transplantation using nervous tissue, anencephalics, embryos and the reproductive system. These Fatwas and decrees, and their implications, are also discussed.

Islam differs from many other religions in providing a complete code of life. It encompasses the secular with the spiritual, and the mundane with the celestial. Man is the Viceregent of God (Allah) on earth. 'Behold thy Lord said to the angels: I will create a Viceregent on

earth.'[2] 'He fashioned man in due proportion and breathed into him something of His spirit.'[3] And not only Adam was honoured by Allah, but his progeny also, provided they followed the right path. 'We honoured the progeny of Adam, provided them with transport on land and sea; given them for sustenance things good and pure; and conferred on them special favours above a great part of our creation.'[4]

Human life begins at the time of ensoulment, which is stated in the sayings of the Prophet to be the 120th day from the time of conception.[5] Prior to that moment the embryo has a sanctity, but not reaching that of a full human being. Life ends with the departure of the soul (or spirit); a process which cannot be identified by mortals except by the accompanying signs – the most important of which is the cessation of respiration and circulation. Some jurists described ... 'weakening of vision, limpness of the feet, bending of the nose, whitening of the temples and the stretching of the face and loss of the ability to wrinkle' as the signs of death.[6] The sanctity of the human body, however, is not lessened by the departure of soul and declaration of death. The human body, whether living or dead, should be venerated likewise. The Prophet Muhammad (Peace Be Upon Him) rebuked a man who broke a bone of a corpse which he found in a cemetery. The Prophet said 'The sin of breaking the bones of a dead man is equal to the sin of breaking the bones of a living man.'[7,8]

The dead body should be prepared for burial as soon as possible, in order to avoid putrefaction (which occurs rapidly in hot climates). Cremation is not allowed. Due respect and reverence should be given to the funeral, as exemplified by the Prophet Muhammad (PBUH) who stood in veneration for the passing funeral of a Jew, at a time when Jews were waging war against him. One of his companions exclaimed: 'It is the funeral of a Jew!' – the Prophet answered, 'Is it not a human soul?'[9]

Historical background

Organ transplantation is not a twentieth century novelty. Indeed, it was known in one form or another even in prehistoric times. Ancient Hindu surgeons described methods for repairing defects of the nose and ears using autografts from the neighbouring skin, a technique which remains to the present day. Susruta Sanhita, an old Indian medical document written in 700 BC, described the procedure later emulated by the Italian Tagliacozzi in the sixteenth century, and by British surgeons working in India in the seventeenth and eighteenth centuries.[10] Tooth transplantation was practised in ancient Egypt, Greece, Rome, pre-Colombian North and South America. Arab

surgeons were experts at this technique a thousand years ago.[11,12]

At the time of the Prophet Muhammad (PBUH) – AD 570-632 – one of his companions, Qatada ibn Nu'man, lost his eye during the battle of Uhud. The Prophet replanted it and it became the better of his two eyes.[13] In the battle of Badr the Prophet (PBUH) replaced the arm of Muawath bin Afra and the hand of Habib bin Yasaf.[14,15] Muslim jurists sanctioned transplantation of teeth and bones which had been practised by Muslim surgeons from a thousand years ago. Imam Nawawi (631–671H/AD1233–1272) fully discussed the subject of bone and teeth transplantations in his voluminous reference textbook *Al Majmu'*,[16] and his concise textbook *Minhaj Attalibin.*[17] Al Imam Asshirbini commented on the same subject in his book *Muqhni Al Muhtaj.*[18]

Zakaria Al Qazwini (600–682H/AD1203-1253) advocated the use of porcine bone grafts as they take much better than other xenografts and function more efficiently,[19] despite the fact that Muslims consider the pig, and the eating of its products, impermissible. Jurists allowed the use of porcine material in medicine provided there was no other or equal alternative.

Islamic principals and rules related to Organ transplantation

Islam considers disease as a natural phenomenon. It is not caused by demons, stars or evil spirits. Indeed, disease is not even caused by the wrath of God or any other celestial creature. Diseases and ailments are a type of tribulation which expiates sin. Those stoics who forbear and endure in dignity are rewarded in this world and on the Day of Judgement. However, man should seek a remedy for his ailments. The Prophet Muhammed (PBUH) told Muslims to seek remedy and treatment.[18] He ordered his cousin Saad ibn Abi Waqqas to seek the medical advice of Al Harith ibn Kaledah, a renowned physician of the time.[20] He also declared that there is a cure for every illness, though we may not know it at the time.[21] Muslims are encouraged to search for such a cure.[22] New methods of treatment should be searched for and applied if proven successful.

The Prophet ordered Muslims to be compassionate to every human being. He also said 'All mankind is the family of Allah. Those who best serve his family are best loved by God.'[23,24]

The human being should always maintain his dignity even in disease and misfortune. The human body, living or dead, should be venerated likewise.[4,7–9] Mutilation of humans or animals is not allowed.[25–28] However, performing post-mortems or donating organs

from a cadaver are not tantamount to mutilation of the corpse or an act of disrespect.[29] The harm done, if any, by removing any organ from a corpse should be weighed against the benefit obtained, and the new life given to the recipient. The principle of saving human life takes precedence over whatever assumed harm would befall the corpse.[29] Nevertheless, Sheikh Shaarawi, a renowned commentator on the *Holy Qur'an,* but not a Mufti (Jurisconsult), rejected all types of organ donation.

In the case of a living donor, the principle of doing no harm – *premium non nocere* – is invoked. The donor cannot give one of his vital organs, which would end his life. It is an act of homicide or suicide, both of which are considered among the most abominable and detestable crimes in Islam. The donation of an organ whose loss would usually cause no harm, or a minimal increased risk to the health or life of the donor, is acceptable if the benefit to the recipient is greater. It invokes the principle of accepting the lesser harm when faced with two evils. The harm done by the disease, which can kill a human life, is not to be compared to the harm incurred by donation.[29]

Organ transplantation is a new method of treatment that can save many human lives and improve the quality of life for many others. Islam encourages a search for a cure and invokes Muslims not to despair, for there is certainly a cure for every ailment, although we may not know of it at the present time. The donation of organs is an act of charity, benevolence, altruism and love for mankind. God loves those who love fellow humans and try to mitigate the agony and sorrow of others and relieve their misfortunes. Any action carried out with good intentions and which aims at helping others is respected and indeed encouraged, provided no harm is inflicted. The human body is the property of God; however, man is entrusted with his body, as well as with other things. He should use it in the way prescribed by God as revealed by His messengers. Any misuse will be judged by God on the Day of Judgement, and transgressors will be punished. Suicide is equated in Islam with homicide. Even cremation of the corpse is not allowed. The only accepted and dignified way is burial of the corpse – which should be performed as soon as possible, but not immediately for medical certainty.

Donation of organs should not be considered as acts of transgression against the body. On the contrary, they are acts of charity and benevolence to other fellow humans, which God loves and encourages. Human organs are not a commodity. They should be donated freely in response to altruistic feelings of brotherhood and love for one's fellow beings.[29,32,34,38]

Islamic Jurists' Fatwas (Juridical Resolutions) regarding organ transplantation

Muslim surgeons practised autograft transplantation which they learned from other nations, especially the Indians. They also practised teeth and bone grafting from both animal and human sources (i.e. xenograft and homografts) as far back as one thousand years ago, having first obtained the consent of the jurists.[10,16–19] Table I illustrates some of the recent Fatwas on organ transplantation. In the twentieth century, Muslim jurists sanctioned blood transfusion, though blood is considered as *Najas* – i.e. unclean. The Fatwa of the Grand Mufti of Egypt, No.1065 dated 9 June 1959, is an example of Islamic jurists' attitude to new methods of treatment.[30]

A Fatwa by a Grand Mufti is a decree and not a mere juridical opinion. So is a Fatwa by a Conference of Jurists.

The majority of the Muslim scholars and jurists belonging to various schools of Islamic law invoked the principle of priority of saving human life and hence gave it precedence over any other argument. Sheikh Hassan Maamoon (the Grand Mufti of Egypt) also sanctioned corneal transplants from cadavers of unidentified persons and from those who agree to donate upon their death (Fatwa No.1087 dated 14 April 1959).[31] His successor, Sheikh Hureidi, extended the Fatwa to other organs in 1966 (Fatwa No.993).[32] In 1973, the then Grand Mufti, Sheikh Khater issued a Fatwa allowing harvesting of skin from an unidentified corpse.[33]

Grand Mufti Gad Al Haq sanctioned donation of organs from the living provided no harm is done, and provided it is given freely in good faith and for the love of God and the human fraternity. He also sanctioned cadaveric donors provided there is a will, testament, or the consent of the relatives of the deceased. In the case of unidentified corpses, an order from the magistrate should be obtained prior to harvesting organs (Fatwa No.1323 dated 3 December 1979).[34] The Saudi Department of Research and Fatwa studied corneal transplantation in H1396 (1976) and H1397 (1977). The Saudi Grand Ulema sanctioned corneal transplants the following year (Decree No.66 H1398/1978)).[35]

In Algiers, the Supreme Islamic Council sanctioned organ transplantation in 1972, while in Malaysia, the International Islamic Conference sanctioned organ transplantation in April 1969.[35]

The Saudi Grand Ulama Fatwa No.99, 1982, addressed the subject of autografts, which was unanimously sanctioned. It also sanctioned (by a majority) the donation of organs both by the living and the dead, who made a will or testament, or by the consent of the relatives (who

constitute the Islamic next of kin).[36] The Kuwaiti Fatwa of the Ministry of Charitable Endowments No.132/79, 1980, sanctioned live and cadaveric organ donation.[35] The Kuwaiti law No.7, 1983, reiterated the previous Fatwas and pointed out that living donors should be over the age of twenty-one in order to give their own consent.

The subject of brain death was not addressed in any of these Fatwas. It was discussed for the first time in the Second International Conference of Islamic Jurists held in Jeddah in 1985. No decree was passed at that time, until further studies and consultations were obtained. In the Third International Conference of Islamic Jurists (Amman 1986), the historic resolution (No.5) was passed with a majority of votes, which equated brain death to cardiac and respiratory death.[37] Death in the true Islamic teaching is the departure of the soul, but since this cannot be identified, the signs of death are accepted. This decree paved the way for an extension of organ transplantation projects which were previously limited to living donors. Campaigns for organ donation from brain-dead persons were launched both in Saudi Arabia and Kuwait.

The unfortunate high incidence of road accidents in the Gulf area provide many cases of brain death. This tragedy should be averted by issuing and pursuing stricter traffic laws and by other means. Meanwhile, it is a pity to waste such candidate cadavers without trying to save the life of many others who need their organs.

The Islamic League Conference of Jurists held in Makkah Al Mukaramah (December 1987) which passed Decree No.2 (tenth session) did not equate cardiac death with brain death. Although it did not recognize brain death, as death, it did sanction all the previous Fatwas on organ transplantation. This decree received little publicity in the media, and cardiac and kidney transplants from brain dead individuals continued without any hindrance from the jurists.

The most detailed Fatwa on organ transplantation was that of the Fourth International Conference of Islamic Jurists, held in Jeddah in February 1988 (Resolution No.1). It endorsed all previous Fatwas on organ transplantation, clearly rejected any trading or trafficking of organs, and stressed the principle of altruism.[38]

The jurists have now started to discuss new subjects related to organ transplantation, viz:

a) transplantation of the nerve tissue as a method for treating Parkinsonism or other ailments;
b) transplantation from anencephalics;
c) transplantation of tissues from embryos aborted spontaneously, medically or electively;

Table I.
Fatwas relating to organ transplantation

Source	Date	Fatwa	Ref
Sheikh Maamoon (Grand Mufti, Egypt)	1959	Sanctioned blood transfusion	30
Sheikh Maamoon (Grand Mufti, Egypt)	1959	Sanctioned corneal transplants	31
Sheikh Hureidi (Grand Mufti, Egypt)	1966	Sanctioned organ transplants	32
Islamic Int. Conference (Malaysia)	1969	Sanctioned organ transplants	35
Algiers Supreme Islamic Council	1972	Sanctioned organ transplants	35
Sheikh Kater (Grand Mufti, Egypt)	1973	Allowed harvesting skin from unidentified corpses	33
Saudi Grand Ulema	1978	Sanctioned corneal transplant	34
Sheikh Gad Al Haq (Grand Mufti, Egypt)	1979	Sanctioned live and cadaveric donation	35
Kuwaiti Fatwa of Ministry of Endowment	1980	Sanctioned organ transplants	35
Saudi Grand Ulema	1982	Sanctioned organ transplants	36
3rd Int. Conference Islamic Jurists (OIC)	1986	Equated brain death with cardiac death	37
4th Int. Conference Islamic Jurists (OIC)	1988	Sanctioned organ transplants and deplored trafficking	38
6th Int. Conference Islamic Jurists (OIC)	1990	Discussed transplantation from embryos, IVF projects, CNS and anencephalics	40

d) left-over pre-embryos from *in vitro* fertilization (IFV) projects.[39]

The Sixth International Conference of Islamic Jurists, held in Jeddah in March 1990, addressed all these issues fully.[40]

It sanctioned transplantation of nerve tissues to treat ailments such as Parkinsonism, if this method of treatment proved superior to other well-established methods of treatment. The sources of the nerve tissues may be:

a) The suprarenal medulla of the patient himself (autograft).
b) The nerve tissues from an animal embryo (xenograft).
c) Cultured human nerve cells obtained from spontaneous abortion or medically indicated abortions.

However, the Conference deplored the performance of abortions for the sake of procuring organs. It reiterated the Islamic views against elective abortion, which is only allowed to save the life or health of the expectant mother. If, however, the foetus is not viable, organs can be procured if the parents donate and only when the foetus is declared dead. The aborted foetus is not a commodity and commercialism is not allowed.

Anencephalics cannot be used as organ donors until declared brain or cardiac dead. The full, informed, consent of the parents should be obtained in every case.

Regarding left-over pre-embryos from IVF projects, the jurists recommended that only the needed ova should be fertilized by the husband's sperms. However, if excess fertilized ova were found, they should be left to die spontaneously. Cryopreservation or donation of these fertilized ova is not allowed.

The jurists also discussed transplantation of genital organs. They did not allow the transplantation of gonads, as they carry all the genetic inheritance from the donor. However, they sanctioned the transplantation of the other internal sex organs.

New frontiers have been opened and Islamic jurists are keeping pace with the tremendous advances in medicine and technology. This review has discussed the pragmatism that prevails in interpreting the Islamic heritage as applied to present day science.

REFERENCES

1. *AlRiyadh Daily Newspaper,* 8 May 1990, No.7989:14–15 (interview with Under Secretary of Ministry of Health and Director of Kidney Foundation).
2. *Holy Qur'an,* Sura 2, Verse 30.
3. *ibid.*, Sura 3, Verse 9.
4. *ibid.*, Sura 17, Verse 70.
5. AlBukhari, M.I., *Sahih AlBukhari*, Cairo: Matabi Asshab (1378H) 1958; 4:135
6. Rispler-Chain, V., Islamic medical ethics in the twentieth century, *J. Med. Ethics* 1989; 5:203–208.
7. Abu Dawud, *Sunan Abi Daw'ud,* Beirut: Dar AlFikir (nd); *Kitab AlGanayiz,* 3: Hadith No.3207.
8. Ahmed ibn Hanbal, *Musnad Ahmed.* Comment by Ahmed Shakir, Cairo: Dar Al Marif Publishing Co., (nd), 6:58.
9. AlBukhari, M.I., *Sahih AlBukhari, Kitab Al Ganayiz;* Cairo: Matabi Asshab (1378H) 1958; 2:107.
10. Bollinger, R., Stickel, D., Historical aspects of transplantation; in: Sabiston, D., ed. *Textbook of surgery,* Philadelphia. London: W.B. Saunders, 13th edn. 1986: 370–380.
11. Guthrie, D.A., *A history of medicine,* Philadelphia, Lippincott 1946: 12.
12. Peer, L.A., *Transplantation of tissues*, Baltimore: Williams & Wilkins 1955.
13. Hawa, S., *Arrasul (The messenger),* 2nd edn. Beirut: Assharikah AlMutahida 1971; 2:97.
14. Asshibani, A.R., (Ibn Adaiba) *Hadaiq, AlAnwar Wa Matali AlAsrar Fi Sirat Annabi AlMokhtar*; 2nd edn. Qatar: Ministry of Endowment (nd), 1:244.
15. AlKhafaji A.S., *Naseem Arriyadh,*; Beirut: Dar AlFikir (nd); 3:111.
16. AlNawawi, M.S., *AlMajmooh Shareh AlMohazab,* cited by AlMutteei, M., Cairo: AlFajalah Press (nd); 1:293.
17. AlNawawi, M.S., *Minhaj Attalibin;* Beirut: Dar AlFikir 1978; 1:190.
18. Asshirbini, M., *Mughni, Al Muhtaj Limarifat Alfaz AlMinjah*; Beirut: Dar AlFikir (nd); 190, 191.

19. AlQazwini, Z., *Ajayib AlMakholohat (Wonders of creatures)*; Beirut: Dar Al-Afaaq AlJadidah, 3rd edn. 1978:422.
20. Ibn AlQayim, M., *Zad Al Ma'ad Fi Hadiy Khir Allbad*, Cairo: Mustafa AlBabi AlHalabi 1970; 3:78
21. AlBukhari, M.I. *Sahih AlBukhari, Kitab Attib*, Cairo: Matabi Asshab (1378H) 1958; 7:148–182.
22. AlQushairi, M., *Sahih Muslim Bishareh AlNawawi*, Beirut: Dar AlFikir1972; 14:191–200.
23. AlNabhani, Y., *AlFateh AlKabeer*, Cairo: Dar AlKotob AlArabiah (1351H) 1932; 2:105.
24. Al-Ajlooni, M., *Kashf AlKhafa Wa Mozeel Alllbas*, Beirut: Dar Ihiya Al-Torath AlArabi, 3rd edn. (1351H) 1932; 1:380.
25. AlBukhari, M.I., *Sahih AlBukhari, Kitab Azzabayeh*, Cairo: Matabi Asshab (1378H) 1958; 7:121–122.
26. AlQushairi, M., *Kitab Sahih Muslim Bishareh A. Nawawi, Kitab AlJihad* Beirut: Dar AlFikir 1972; 12:37.
27. Abu Dawud, *Sunan Abi Daw'ud, Kitab AlJihad*, Beirut: AlFikir (nd); 3:No.2562, 2564, 2666–2675.
28. Ahmed ibn Hanbal, *Musnad Ahmed*, Cairo: Dar AlMaarif Publishing Co. (nd); 1:338; 2:13, 103; 5:168, 173.
29. Sharafuddin, A., *AlAhkam Asariyah Lil-Aamal Attibiyah*, Kuwait: National Council for Culture, Arts and Literature 1893; 89–160.
30. Dar Allfta AlMisryah, *Al-Fatwa Allslamiyah*, Cairo: The Supreme Islamic Council, Ministry of Endowment, fatwa of Sheikh Hassan Maamoon (No.1065, 9 June 1959), 1982; 7:2495.
31. *ibid.*, 1982; 7:2552.
32. *ibid.*, 1982; 6:2278–2282.
33. *ibid.*, 1982; 7:2505–2507.
34. *ibid.*, 1983; 10:3702–3715.
35. Abu Zaid, B., *Attashrih AlGothmani Wanagel Watta'weed Allnsani*. Majalat Majmah AlFiqh Allslami, Jeddah: Organization of Islamic Conference 1988; 1:145–186.
36. Saudi Grand Ulema. Fatwa No.99 dated 6/11/1402H (25 August 1982). *Majalat AlMajma AlFiqhi: Journal of Fiqh Academy* 1987; 1:37.
37. *Fiqh Academy Book of Decrees*. Decree No.5, 3rd Conference of Islamic Jurists (Amman: 11–16 October 1986). Jeddah: Fiqh Academy and Islamic Organization of Medical Sciences, 1988:34.
38. *ibid.*, Decree No.1:55–58.
39. Seminar on new issues in organ transplantation (Kuwait: October 1989). Jeddah: Fiqh Academy and Islamic Organization of Medical Sciences (not yet published).
40. Fiqh Academy Decrees and Recommendations for the 6th Conference of Islamic Jurists (Jeddah, 14–20 March 1990). Decrees No.56/5/6; 57/6/6; 58/7/6; 59/8/6.

CHAPTER TWO

THE PROBLEMS OF ALCOHOL DEPENDENCE AND ITS SOLUTION IN ISLAM

Alcohol dependence is a worldwide problem, more intense and widespread than all other drug dependencies combined. In all countries where the consumption of alcohol is legally permitted, the majority of the adult population drink. In the USA, at least 100 million Americans drink alcoholic beverages either occasionally or constantly. The majority of those who drink are 'social drinkers', with little apparent ill-effect. However, some ten per cent of all those who drink suffer from problems related to alcohol consumption. Although the percentage may seem small, the total number of individuals involved is quite large.

In the USA, there are 10 million alcohol dependents, of which 1–2 million suffer organic physical complications.[1,2] In what was formerly the USSR, 25 million suffer from alcohol dependence; in France 4–4.5 million; in the West German states, 2.5 million; and in the UK 0.5–1 million are labelled alcohol-dependent. In many countries, especially in the Eastern bloc and some developing countries of Asia, Africa and Latin America, 5–10 per cent of the whole population suffer from alcohol dependence.[3]

The 32nd World Health Authority Assembly in 1979 declared, in Resolution WHA 32,40, 'Problems related to alcohol and particularly to its excessive consumption, rank among the world's major public health problems' and 'constitute serious hazards for human health, welfare, and life.'[3]

The economic costs of dealing with such problems cannot be counted. In the USA alone, the annual cost of alcohol-related problems was estimated at $113 billion.[4] The heavy toll of human unhappiness represented by broken homes, neglected children, ruined careers, and loss of human life is beyond calculation. The loss of

human life due to alcohol is also staggering. In the USA the death toll due to traffic accidents is 60,000 annually, at least half of which are related to alcohol consumption. Deaths due to diseases caused by alcohol range from 15,000 to 20,000; suicide and murder committed under the influence of alcohol reaches a similar figure.[3,5] The Surgeon General of the USA, Everett Koop, estimated the death toll due to alcohol consumption in 1986 at 125,000 annually.[27]

The tendency is to treat the alcoholic while leaving aside the problem of availability of alcohol in the community. The WHO Technical Report 650, 1980, deprecates such an attitude and calls for primary prevention. The USA tried hard from 1920 to 1933 to forcibly prohibit alcohol and to maintain abstention throughout the country. Unfortunately, this attempt at prohibition by legal means ended in disastrous failure.[2] Most countries nevertheless legalized alcohol consumption in order to avoid excessive drinking. Driving cars whilst under the influence of alcohol is punishable in all countries of the world, and youngsters are not allowed in public houses. Regrettably, this type of limitation has proved fruitless. Education on alcohol and its dangers seems to be of some benefit, but the effect is largely discounted by slick advertising campaigns.

The drink industry spends hundreds of millions of dollars and pounds on advertising. Alcohol consumption is portrayed as a sign of manliness, maturity, and sexual prowess. More and more people get the drinking habit, and many become totally alcohol-dependent.

Hospital and health resources are drained. Alcohol dependents constitute between one-third and one-half of the admissions to mental hospitals in many countries.[3] Between one-fifth and one-fourth of all admissions to general hospitals in many countries are due to alcohol-related problems.[3,5,6]

The WHO Expert Committee on Drug Dependence emphasized that problems related to alcohol consumption can no longer be considered merely as medical or moral problems of the individual, with repercussions on the welfare of his family. These problems now affect the health, welfare and safety of whole populations and, according to reports from some countries, even national development.[3]

Alcoholism or alcohol-dependence is considered as a disease. The three cardinal symptoms are: loss of control, increasing need, and inability to stop drinking alcohol. There are many underlying causes for drinking excessively; e.g. personal problems, failures at work or in love, social upheavals (e.g. refugees), calamities, and poverty.

Simply, alcohol is a drug that will cause dependence and people

exposed to it are likely to become alcohol-dependent whenever they are maladjusted for any reason.

Only Islam has managed to curb the problem of alcohol intake and to eradicate it almost completely.

How Islam solved the problem

Islam completely banned the use of alcohol fourteen centuries ago. It did this by a few verses *(ayas)* of the *Holy Qur'an* and instructions by the Prophet Muhammad (PBUH).

Unlike the Americans who failed to conform with the prohibition law of 1919, the ignorant Arabs conformed immediately to the ban proclaimed by the *Holy Qur'an.*

One may argue, perhaps, that the pre-Islamic Arabs *(Jahiliya)* were not so alcohol-dependent as the twentieth century Americans. Unfortunately, historical fact tells us that the Arabs were heavily involved with the intoxicating liquor – even more so than the present-day Americans or Europeans.

Arabs in their *Jahiliya,* and even after Islam, considered liquor as a source of joy, benevolence, good food and an indispensible tool for maintaining good health. Many of those Arabs newly-converted to Islam tried to convince the Prophet that they drank liquor and gave it to others only as a medicine. The Prophet (PBUH) was most emphatic: 'It's no medicine. It is itself a cause of disease and ailment.'[7-12]

Alcohol was indispensible in the life of pre-Islamic Arabs. Tensions were high, tribal feuds and fights were the norm. For the most trivial causes, cousin tribes would fight each other for decades, almost to the point of annihilation. Family life was disrupted. Female children were treated extremely harshly, even put to death at the moment of their birth, and most cruelly. Female babies were generally buried alive or hurled to death from high places, or suffocated by either the father or mother. The *Holy Qur'an* condemned this behaviour:

> 'If one of them receive the tidings of a female, his face remains darkened and he is in wrath inwardly. He hides himself from his folk because of the bad news. He contemplates: Shall he keep the child in contempt or bury it in the dust? Verily evil is their judgement.'[13]

Men, and even women, sought refuge in intoxicating liquor in such a harsh and insecure environment. It is clear, therefore, from the history of pre-Islamic Arabs, that the use of alcohol was widespread and that heavy drinking and alcoholism were rampant. Islam did not primarily attack alcohol intoxication, adultery, or gambling. Islam

first attacked the deep-rooted false beliefs and values upon which they were based. Idolatry and tribalism and their values were the real source of *Jahiliya* or ignorance. Alcoholism, gambling, and adultery were simply the fruits of the tree of *Jahiliya* whose main root was idolatry.[14-16]

Lady Ayisha, the wife of the Prophet Muhammad, was quoted by Al Bukhari to have said:[17]

> 'If the *Qur'an* first told the Arabs not to drink Khamr and not to gamble or perform fornication or adultery, they would have said: "No, we cannot comply". The *Qur'an* kept putting in their hearts the fear and love of God, the description of the life hereafter with its paradise and Garden of Eden for those who obey, and Hell and its Fire for those who rebel, until their hearts softened. Then they were commanded to stop Khamr, adultery and gambling, and they complied.'

Even then, Khamr was not abruptly prohibited. It took three years to completely ban the intoxicant liquor. Muslims began to ask questions about Khamr.

> 'They will ask you about Khamr and games of chance [gambling]. Say: In both, there is great sin and some utility for man, but the evil they cause is greater than the benefit they bring.'[18]

This *aya* turned many devout Muslims away from Khamr and gambling. However, because the intoxicant liquor was not explicitly banned, the bulk of Muslims continued to drink, particularly in the morning, *Sabouh,* and in the evening, *Ghabough.*[15-18] However, this injunction must have helped in reducing the total consumption of alcohol in Madinah, the State Capital of Islam.

Another edict was issued when one of the companions prayed while inebriated, and made hideous mistakes in reciting the *Holy Qur'an* in his prayer.[19]

> 'Oh believers, do not pray when you are drunken until you know what you are saying.'

The restriction was very important, as drunkenness was placed, for the first time, face to face against prayer which is distributed throughout the entire day, starting with dawn prayers and ending with night prayers.

This resulted in conflict between the new commandment and the established Arab custom of drinking in the morning *(Sabouh)* and early evening *(Ghabough).* An internal struggle would have been fought by many heavy drinkers in order to curb their drinking habits.

A few chronic alcoholics might even have shown some signs of withdrawal sysmptoms, such as fits or delirium tremens.

Honey would have been used as a means of treatment. It was recommended by the *Holy Qur'an* and the Prophet Muhammad as a source of good food and medicine.[20,21]

The *coup de grâce* was finally delivered to Khamr in the wake of a feast held by the Muhajireen (Makkans) and Ansar (those of Madinah) at which hard liquor was served. Once intoxicated, they began boasting, followed by fighting with the bones of the feast. Later, when they were restored to their senses and the effect of the liquor had worn off, they were depressed; they felt sinful and guilty. At this point, the *Qur'an* appeared and announced that gambling and intoxicant liquors were henceforth prohibited for all Muslims.

> '. . . Satan wants only to cast among you enmity and hatred by means of strong drink and games of chance and to turn you away from prayer. Will you not then, desist.'[22]

The response from the entire community was impressive. They cried as one: 'O Allah, we have desisted!'

Anas ibn Malik was quoted as saying:

> 'When Khamr was banned, the Arabs were still loving Khamr and nothing was more difficult for them than to conform to prohibition. However, they conformed well. Everyone of us who had Khamr at his home brought it out in the street and threw it away. For many days the lanes and streets of Madinah smelled of the intoxicant liquor.'[23,24]

The Prophet (PBUH) asked the people of Madinah to bring out whatever Khamr they had at home and he, with a knife, cut open the skin bags that contained the liquor. On that day, the Prophet (PBUH) proclaimed his famous *Hadith*, whereby he cursed Alkhamr, the ones who drink it, brew it, sell it or even serve it.[25] In the matter of a day or two, a whole city state became abstinent and the most successful campaign that had ever been launched by man against alcohol dependence was miraculously achieved.[23,24]

Ever since that fateful day, Muslims all over the world (about 1000 million of today's world population) are the least affected by alcohol and its problems. Though Muslims constituted different nations and cultures, nevertheless the majority of them kept their abstinence throughout the ages.

Arnold Toynbee, in his book *Civilization on Trial* (quoted in ref.15), said:

> 'The Islamic spirit . . . may be expected to manifest itself

> in . . . a liberation from alcohol which was inspired by religious conviction and which was, therefore, able to accomplish what could never be enforced by the external sanction of an alien law. Here, then, in the foreground of the future, we can remark . . . valuable influences which Islam may exert upon the cosmopolitan proletariat of a western society that has cast its net round the world.'

Even in the USA, where proscription of alcohol failed so miserably, Islam has proved capable of solving this intricate problem. The Black Americans were maltreated since they were first brought from the West African coast as slaves, to work in the fields and mines. Under these circumstances of insecurity, poverty, ignorance and crime, alcoholism and drug addiction were rampant among them. Many were beyond treatment by modern medicine and were labelled psychopaths and sociopaths.

However, once the light of Islam had entered their hearts they were remarkably changed. They turned away from alcohol, drug addiction and crime, and were completely resurrected. James Baldwin in his book *The Fire Next Time*[26] wrote the following to his fellow American Blacks:

> 'And now suddenly people who have never before been able to hear this message of Islam hear it and believe it, and are changed . . . [Islam] has been able to do what generations of welfare workers and committees and resolutions and reports and housing projects and playgrounds have failed to do: to heal and redeem drunkards and junkies, to convert people who have come out of prisons and keep them out, to make men chaste and women virtuous, and to invest both male and female with pride and serenity that hang about them like unfailing light.'

The miracle had taken place, and these harassed drunkards and junkies were completely changed by Islamic teaching.

A few years ago, *Life* magazine carried an article on how the black prisoners in Washington Prison had been changed by Islam. They ceased their lewdness, iniquity, homosexuality, drug and alcohol addiction, and became straightforward, chaste and virtuous men and women.

How Islam managed to dry out whole communities and put them on the correct path needs further study from all nations.

REFERENCES

1. Harris, Alcohol problems and alcoholism; In: *Cecil Loeb Textbook of Medicine,* (Beeson, P.B., McDermott, W., eds.) 13th edn. Saunders Co., Philadelphia. London 1971: 138–142.
2. Miles, S., *Learning about alcohol.* Washington DC: American Association for Health Physical Education and Recreation/A National Affiliate of the National Education Association. 1974:12.
3. Report of a WHO Expert Committee: *Problems related to alcohol.* WHO Technical Report Series, No.650. Geneva: WHO 1980:13,23.
4. Royal College of Physicians: *A Great and Growing Evil: The medical consequences of alcohol abuse.* Tavistock Publications, London 1987, p.9.
5. Brunt, P., Alcoholism as a medico-social problem. In: *Topics in therapeutics,* 4. (Vere D.W. ed.) Royal College of Physicians, London: Pitman Medical 1978: 124–135.
6. Quinn, M., Johnston, R.V., Alcohol problems in acute medical admissions. *Health Bulletin* (Edinb.) 1976; 34:253–256.
7. Muslim (Al Qushairi), *Al Jamee Al Saheeh.* Dar Ihya Alkotob Al Arabia. Issa Albabi Al Halabi. Cairo (nd). *Kitab Al Ashiribah* (36) Hadith No.12.
8. Abu Dawud (Al Sigstani), *Sunan Abi Daw'ud.* Dar Al Hadith, Homs, Syria (nd). *Kitab Al Ashiribah,* p.2.
9. Tirmithi (Abu Issa), *Tohfat Al Ahwathi Bishareh Jamee Al Tirmithi,* ed. Mubarkfuri. Al Maktaba Assalafiyah, Al Madinah Al Monawarah, Saudi Arabia 1382H. *Kitab Al Ashiribah* 26:8.
10. Iban Maja, *Sunan Ibn Maja,* Matbaat Issa Al Halabi. Cairo (nd). *Kitab Al Ashiribah* 36:27.
11. AlDarmi, *Sunan AlDarmi.* Sharikat At Tibah AlFanyah Al Motahidah, Cairo 1386H. *Kitab Al Ashiribah* 9:6.
12. Ibn Al Qayim, *Al Tib al Nabawi.* Dar Al Torath, Cairo 1978. Commented by Dr Mutti Qalaagi, 222–225.
13. *Sura 16: The Bee. Aya* 58–59.
14. AlNadawi, *Abu Al Hassan: Maza Khasira Al alam Binhitat Al Moslmeen.* Dar Al-Qalan Publishers, Kuwait 1970: 71.
15. Badri, M., *Islam and alcoholism.* American Trust Publication. Copyright: Muslim Students' Assoc. USA & Canada, 1976: 14–18.
16. Qutub, S., *Fi Dhilal AlQur'an,* Sura 6, *Women,* verse 90–91. Dar AlShorooq, Jeddah 1980.
17. AlBukhari, Cairo 1376H. *Kitab Fadyel AlQur'an* 66:6.
18. Ibn Kathir, *Tafsir AlQur'an AlAzim Dar Alfikir,* Beirut 1970. Sura *The Cow,* aya 219.
19. *ibid.,* Sura 4 *The Women,* aya 43.
20. *Holy Qur'an,* Sura 16 *The Bee,* aya 68–69.
21. Ibn Maja, *Sunan Ibn Maja,* Matbaat Issa AlBabi Al Halabi, Cairo (nd) 2:1142.
22. *Holy Qur'an,* Sura 5, *The Table,* aya 90–91.
23. AlBukhari, M., *AlJamie AlSahih, Maktabat AlNadah Al Haditha.* Cairo 1376H; *Kitab Al Ashiribah* 74:3.
24. Albar, M., *Alkahamir Bain AlTib WaAlfiqh,* Saudia Publishing House, Jeddah, 7th edn. 1986: 99–146.
25. Ahmed ibn Hanbal, *Musnad Ahmed,* Dar Al Maarif, Cairo. Commented by Ahmed Shaker, vol.1:316; vol.2 25, 69, 97, 128.
26. Baldwin, J., *The fire next time.* London: Penguin Books 1962: 39–68.
27. *Time* magazine, 30 May 1988: 47.

CHAPTER THREE

SOCIO-MEDICAL PROBLEMS RELATED TO ALCOHOL CONSUMPTION

Abstract

Alcoholic beverages have been used since antiquity. Unfortunately, the last three decades have seen a tremendous increase in its consumption, both in the developed and developing countries.

As a consequence, the socio-economic losses have been staggering. Alcohol consumption is a major factor in road accidents, industrial injuries and crimes of violence. Industrial loss is enormous, and in many countries alcohol abuse is the major cause of absenteeism, loss of production and hooliganism. Crimes of violence such as incest, rape and other sexual offences are more often than not committed under the influence of alcohol; wife and child batterers are usually heavy drinkers. In this chapter, the increasing incidence of alcohol dependence and the ensuing socio-medical problems are explored.

Since alcohol was first discovered it has been used for many purposes, including real and imagined benefits. 'As a social lubricant, aperitif and mild "anaesthetic" it holds pride of place; as a drug of addiction, a physical poison and a community evil it has no equal.'[1] The greater part of the total harm arising from alcohol consumption within a community results from the large number who drink moderately, rather than the relatively few who drink heavily. Reduction in the moderate drinking of the majority will have a far better effect on the health of a community than comparable efforts to rescue or treat alcoholics.[2]

Extent of the problem

Although the consumption of alcohol has been indulged in by man for thousands of years, the global increase in imbibing over the past three decades is truly alarming – the total world consumption has never been so high.[3] Probably the best criteria to estimate the marked increase of alcohol consumption are total and per capita consumption in different countries during a certain period of time.

Table I.
UK alcohol consumption:

	1965	1975
Beer	30.3	40.1 (million bulk barrels)
Spirits	17.5	31.6 (million proof gallons)
Wines	35.6	77.5 (million liquid gallons)
Population:		
15 years	41.531	42.887 (million)

Table II.
Alcohol consumption in litres of pure alcohol (100%) per person per year[4]

Country	1950–52	1960–61	1971
France	–	18	16.7
Italy	9	13	13.9
W. Germany	3.1	8.5	12.3
Spain	7	6.7	12.0
Austria	6.5	6.8	11.4
Argentina	8	7	10.9
Hungary	6	6.7	9.5

The World Health Organization Committee on Alcohol-Induced Problems found that per capita consumption of alcoholic beverages had been increasing throughout most of the world in the last twenty years. Between 1960 and 1972, for example, recorded worldwide production increased by 19 per cent for wine, and by 68 per cent for distilled spirits. Both industrialized and developing countries in various regions of the world showed that the annual consumption of alcoholic beverages, in terms of 100 per cent ethanol (ethyl alcohol), was above eight litres per capita in only two countries in 1950, but by 1976 this level was reached in 22 countries.[3]

A WHO report in 1982[5] showed that by 1982, beer production had increased by 124 per cent worldwide. In some countries in Asia, the increase was horrendous – in the order of 500 per cent. In some African countries an increase of beer consumption was reportedly as high as 400 per cent. Even in remote villages in many third-world countries, alcoholic beverages were consumed even while they lacked clean water, sewage disposal and primary health amenities.

There is a consistent correlation within a community between per capita consumption of alcohol and crimes of violence, traffic accidents, major industrial and economic losses, cirrhosis of the liver, death from alcoholism and its related diseases.

In the UK, the per capita spending on alcohol has increased by 76 per cent in a ten-year period (1960–1970). The adult population in the UK drank about twice as much alcohol in 1984 as it did in 1950. Spirit consumption increased by 135 per cent, while wine consumption increased by 250 per cent.[6] Losses due to alcohol consumption are so great that it is impossible to list all the consequences which now befall mankind from this menace.

In 1979, members of the executive board at its 63rd session, and delegates from numerous countries attending the 32nd World Health Assembly, confirmed that alcohol problems now rank among the world's major public health concerns (WHO Resolution 32,40).[3] Alcohol problems in many parts of the world constitute a serious obstacle to socio-economic development and threaten to overwhelm the health services.[3] A summary of the major losses is given below.

Socio-economic losses

Although the alcohol industry seems to benefit a few big international industrial companies and provide jobs for many workers, and even seems to increase state revenue by levying taxes on alcoholic beverages, the truth is that the total socio-economic loss is so enormous that these benefits become trivial. The deleterious effect on health, welfare and social consequences of alcohol consumption will more than tilt the balance towards the benefits of proscribing, or at least limiting, alcohol consumption.

The cost of alcohol abuse to a society is difficult to measure. In the USA, it was estimated that $30,000 million were lost due to alcohol consumption in 1971.[1] Table III shows some of these losses. By 1979, these estimated costs were put at $43,000 million,[3] and by 1986 the estimates had reached the staggering figure of $120,000 million. The UK spent £3,000 million sterling on alcohol in 1971; a figure which had increased to £11,434 million in 1984.[6] France, in 1971,

spent an equivalent amount ($7,000m. annually).[8] West Germany in 1971 was spending DM.27,584 million on alcohol, compared with DM.12,756 on smoking.

Table III.
Estimated economic costs in the USA in US dollars:

	1971 $ Mill.	1979* $ Mill.
Lost industrial production	14,869	77,546
Health care costs	8,293	20,465
Road accidents	4,666	6,768
Violent crimes	1,466	4,977
Social response	–	3,467
Fire losses		647
TOTAL	29,294	113,870

Alcohol features prominently in traffic accidents. The WHO statistics suggest that it is involved in about fifty per cent of all traffic accidents. Even in countries where alcohol and addictive drugs are banned, like Saudi Arabia, the director of the department of alcohol and drug control claims that about fifty per cent of long-distance road accidents are due to alcohol and drug abuse.[9]

In the USA, 25,000 deaths occur annually due to accidents caused by alcohol consumption. Another 15,000 deaths occur due to diseases caused by alcohol, and another 15,000 due to suicide, murder and other crimes committed under the influence of alcohol.[10] The risk of accidents is exacerbated when blood alcohol levels exceed 50 mg per cent; at blood alcohol levels of 200 mg per cent, the risk is a hundred-fold above that of the non-drinker.[1] It is estimated that some 500,000 people die annually due to tobacco and alcohol consumption.*

Alcohol also plays a prominent role in crimes of violence. Nearly 70 per cent of murders are committed under its influence.[1] The WHO, after studying violent crimes in thirty countries, came to the conclusion that 86 per cent of murders and 50 per cent of rapes and other crimes of violence were committed under the influence of alcohol.[11]

* From Royal College of Physicians: *A Great and Growing Evil: the medical consequences of alcohol abuse*. Tavistock Publications, London 1987, p.9.

* Everett Koop, Surgeon General of USA, declaration published in *Time* magazine 30 May 1988, p.47, whereby the victims of tobacco in the USA were estimated at 350,000 (plus 50,000 for passive smoking) and the victims of alcohol were estimated at 125,000 annually.

In the *Daily Mail* of 26 June 1980, Lord Harris – who headed a commission on prison population – is reported as saying that the majority of criminals were suffering from alcohol-related problems. At least fifty per cent of the worst crimes were committed whilst under its influence.

Industrial losses are enormous. In Scotland alone, they reached £100 million annually.[12] In the USSR, alcohol abuse was the most important cause of absenteeism and loss of production.[13]

The WHO Technical Report 650 of 1980 cites the following consequences of alcohol abuse: absenteeism, illness, decreased quality of work, difficulties in work relationships, accidents and loss of trained personnel. Many countries, especially in the third world, suffer badly from loss of management and trained staff due to alcohol abuse.

A lot of other social problems arise out of alcohol abuse. Seventy-four per cent of wife and child batterers are heavy drinkers. Incest, rape and other sexual crimes are frequently committed under the influence of alcohol. Divorce and separation are often the ultimate result of indulgence in alcohol.

The price paid in human misery, poverty, broken homes and social degradation is beyond calculation.

Incidence of alcohol dependence

The term 'alcohol dependence' has replaced the rubric 'alcoholism', which is a derogatory, unspecified term. Alcohol dependence is manifested by overt drinking behaviour, a continuation of drinking in a manner not approved by one's culture, and changed behavioural state. The dependent person's control over his drinking becomes impaired, his craving for drink becomes relentless, his thirst unquenchable; planning for drinking takes precedence over all other activities. Altered psychosomatic states occur, wherein the dependent person experiences the psychological and/or somatic signs of withdrawal during periods of abstinence. There is also increased tolerance, whereby the effective dose of the intoxicant has to be increased in order to get the same pharmacological effect and satisfaction from the drug abused.[14,15]

It is estimated that at least one in ten of those who drink alcohol, even occasionally, will become alcohol-dependent. In the USA, the majority of the adult population drink. Some 100 million Americans drink alcoholic beverages at least occasionally.[14] The statistics seem to show that practically every seventeen or eighteen-year-old will have experimented with at least one drink. As many as 50 to 85 per

cent of high school students drink at least occasionally. The average age at which youth begins to experiment is 13 to 14 years.[16] In Scotland, 92 per cent of boys and 85 per cent of girls have experienced alcohol by the age of fourteen.[17] In the age group 17–30, no less than 87 per cent of men and 60 per cent of women are regular drinkers.[18]

Youngsters are more prone to heavy drinking when they are exposed to alcohol. In Scotland, 70 per cent of boys and 61 per cent of girls admitted to heavy drinking occasionally, while 40 per cent of boys and 32 per cent of girls (15–16 years) are regular heavy drinkers.[19] Sixty per cent of Glasgow's six-year-olds had tried alcohol.[17]

More women are becoming exposed to drinking. Heavy drinkers among women rose from 4 per cent in 1972 to 11 per cent in 1978.[20] In the USA, 93 per cent of teenagers (12–17 years) have experienced alcohol and 1.2 million teenagers drink regularly.[21]

In the former USSR region, the problem seems even worse. Ninety per cent of all cases of acute alcoholic intoxication being treated for the first time are individuals under fifteen years of age; one-third of them are under ten years of age.[22] Fifteen per cent of the adult population are at present getting treatment for alcohol dependence.

Due to this high consumption of alcohol, there are hundreds of millions who suffer from alcohol abuse annually in the whole world. In the USA, it is estimated that ten million individuals are suffering from deleterious effects of alcohol abuse[10] (problem drinkers and alcohol dependent). Tens of millions of people are involved with alcohol-dependent persons.[16] In France and West Germany, there are 2.5 million alcohol-dependent persons for each country, while in the UK the figure is lower, 0.5 to 1 million. Those who are labelled heavy drinkers (more than 51 units for males and 35 units for females), amounted to 3 million in England and Wales in 1981.[23] In the USSR, a staggering figure of 25 million individuals puts the region on top of the world as the first alcohol-dependent country. In France, one-third of the electorate get some or all of their income from the production and sale of alcoholic beverages.[24]

It is estimated that 40,000 deaths occur annually in the UK due to alcohol consumption. Though this figure is staggering, it is less than half those killed by smoking cigarettes (100,000). Nevertheless, heavy drinkers have a mortality rate that is more than twice that of the normal population.[23]

The 1980 WHO Technical Report on Alcohol, claims that in many

countries the heavy drinkers and alcohol-dependents constitute 4 to 10 per cent of the whole population. The WHO Expert Committee on Drug Dependence concluded that: 'In many parts of the world, problems associated with the use of alcohol far exceed those associated with the non-medical use of less socially accepted dependence-producing drugs such as amphetamine, cannabis, and morphine types.[3] The reason for this widespread alcohol dependence emerges from the fact that many civilizations look upon alcohol drinking, at least in moderation, as normal and socially acceptable behaviour. 'Alcohol is such a permissible and trusted poison, so easy of access for those who wish to escape from their troubles that it is resorted to in excess by maladjusted persons.' So said Sir Aubry Lewis, writing in Price's *Textbook of Medicine*.[25]

Even in Muslim countries where alcohol is completely banned by Islam, alcohol dependence is becoming a problem that has to be tackled. In Khartoum (Sudan), Dr al-Bager studied the incidence in 1975–1976.[26] He found the following important facts:

1. That females rarely drink alcohol;
2. That most of those who drink alcohol started at the age of 16 or over;
3. That the majority of alcohol drinkers do not drink at home, where there is still strong opposition within the family;
4. The male adult population in Khartoum province in 1975 was 417,820. Forty-seven per cent of them have tried alcohol at least once. Eighty-seven per cent of those who drink are social drinkers, while the remaining 13 per cent are regular daily drinkers who are starting to have some problems as a result of their drinking habits.
5. Divorce was five times higher in those who drink compared with non-drinkers.
6. Twenty-two per cent of those who drink do so because of psychological problems, while 9 per cent do so because of problems at home.
7. Fifty-two per cent of all traffic accidents in 1975–76 were committed under the influence of alcohol.
8. The amount spent on alcoholic beverages (£10m.Sudanese) represents double the amount allocated to the Ministry of Health in 1975. In Bahrain, a small Gulf country, the consumption of alcohol is very high indeed. As much as 9 million Kg. of alcoholic beverages were consumed in 1981. The total annual cost was estimated at £3195 million.[27,28] *Medicine Digest*[5] summarized the WHO 1982 report on alcohol and its problems. Most Islamic countries have minor problems related to alcohol consumption.

Saudi Arabia, Iran, Kuwait, Qatar, Libya and North Yemen were all prohibiting alcohol in 1982. By 1984, Pakistan and Sudan had followed suit, while Egypt and Bahrain allowed alcohol in tourist places, both for indigenous persons and foreigners.

Unfortunately, many Muslim governments have tried to spread alcohol consumption against the will of the majority of the populace. In Egypt, Turkey, Tunisia, South Yemen, Indonesia, Iraq, Syria and many others, the governments not only encourage private enterprise in the brewing industry, but the governments themselves either share, or own outright, the breweries and alcohol factories. They help spread alcohol consumption in their nations on the assumption that they will increase their income and provide more jobs for the unemployed. Some governments see in alcohol a distraction from active politics. The ill-effects that ensue from this policy are well-manifested by the staggering size of debts owed to the international banking system.

Though the majority of the masses in Muslim countries abstain from alcohol despite the incitement by their governments – the élite are unfortunately entangled in the cobwebs of problems that come with alcohol consumption. This is entirely due to the contradictory effects of westernization on the élite and the junta, who are deeply hypnotized by the western civilization and who try to promulgate its values to a completely different culture.

REFERENCES

1. Brunt, P., Alcoholism as a medico-social problem. In: *Topics in therapeutics*, London, Royal College of Physicians, Pittman Medical Pub. Co. 1978: 124–135.
2. Report of Royal College of General Practitioners: Alcohol, a balanced view. *J. Roy Coll Gen Pract* 1986; 24:1–3.
3. Report of a WHO Expert Committee: Problems related to alcohol, WHO Technical Report Series No.650, WHO, Geneva 1980: 7–13.
4. Fosander, O., Biochemical problems in alcohol studies. *Das Med Prisma* 1974; 3:3–5.
5. *Medicine Digest* 1982; 8(12):57.
6. Report of Royal College of General Practitioners: Alcohol, a balanced view. *J Roy Coll Gen Pract* 1986; 24:4–7.
7. *Al-Sharq al-Awsat* newspaper, 1 July 1980 (last page).
8. *ibid.*, 11 November 1986 (last page).
9. Personal contact with the Director of the Dept. of Alcohol & Drug Control, Saudi Arabia.

10. Harris, I., Alcohol problem and alcoholism. In: *Cecil Loeb textbook of medicine*, 13th edn., (Beeson, P.B., McDermott, W., eds.) Philadelphia, Saunders Co. 1971: 138–142
11. *Daily Mail*, 26 June 1980.
12. Scottish Council on Alcoholism: annual report 1977.
13. *Gulf Times*, 12 January 1983.
14. Edwards, G., *et al.* Alcohol related disabilities. WHO, Geneva (WHO Offset Pub. No.32) 1977:13.
15. *Manual of the international statistical classification of diseases, injuries and causes of death;* WHO, Geneva 1977, 1:198.
16. Miles, S., *Learning about alcohol.* American Assoc. for Health Physical Education & Recreation/A National Affiliate of the Nat. Educ. Assoc., Washington DC, 1974:10–14.
17. Jahoda, G., Grammond, J., Children and alcohol. London, OPCS, HMSO, 1972.
18. Dight, S., Scottish drinking habits, OPCS, HMSO, 1976.
19. Plant, M.A., Peck, D.F., and Stuart, R., Self reporting drinking habits and alcohol related consequences among cohort Scottish teenagers. *Br J Addict* 1980, 77:75–90.
20. Show, S., Causes of increasing drink problems amongst women. In: *Women and alcohol.* London, Camberwell Council on Alcoholism 1980: 1–40.
21. Stranger, V., Sex, drugs and rock 'n roll. Understanding teenager behavior. *Paediatrics* 1985; 76:659–63.
22. *Al-Madinah* newspaper, 13 December 1984, quoting a Russian magzine *Nash Supermenik.*
23. Report of Royal College of General Practitioners: Alcohol, a balanced view; alcohol and society. *J Roy Coll Gen Pract* 1986; 24:45–53.
24. Badri, M., Islam and alcoholism. American Trust Publications 1976: 41.
25. Lewis, A., *Psychological medicine*, 10th edn. London, OUP 1966:1172–74.
26. Al-Bager, O.S., *Zahirat Ta'ati al-Khumur.* Khartoum (Sudan), Military Press, 1979: 34–38.
27. Towaijri, A.M., Ghadan Sawfa Yuqtalun, 'Tomorrow they will be killed'; *J. Risalat al-Khalij* 1985; 16(5):9–28
28. Musaiger, A., Youngsters and drugs in Arab Gulf countries (Arabic), Kuwait, al-Rabian Pub. Co. 1985.

CHAPTER FOUR

SOME MISCONCEPTIONS REGARDING THE HEALTH-PROCURING PROPERTIES OF ALCOHOL

Abstract

Claims have been made for and around the health-procuring properties of alcohol since antiquity. The pre-Islamic Arabs of *Jahiliya* were among the staunch believers of the medical powers of liquor. When Islam proscribed alcohol, many of the newly-converted to Islam tried to convince the Prophet Muhammad (PBUH) that they used liquor only for its medical powers and health-procuring properties. The Prophet told them that it is no medicine, it is a cause of disease and ailment. Nevertheless, the misconceptions continued long after Islam was established. Many renowned physicians, such as Abu Bakr al-Razi (Rhazee) and Ibn Sina (Avicenna), believed in the benefits of moderate drinking and considered it health-enhancing. Laymen still believe in these properties. These misconceptions are discussed and shown to be lingering myths from bygone days.

Since ancient times, alcoholic beverages have been used not only as a social lubricant, aperitif, and a source of pleasure, but also as a remedy for many different ailments and diseases, ranging from insomnia and indigestion to angina pectoris and heart attacks. The list of diseases for which alcoholic beverages were used as a remedy was indeed extensive.

'Alcohol' is a generic term used by scientists to denote a particular family of chemical compounds with similar structures and properties. Among these are methyl alcohol, also known as methanol or wood spirit because it was originally made by destructive distillation

of wood. It is the simplest in structural formula (CH_3OH) and is used as antifreeze. Unfortunately, it is also used by some chronic degenerative alcoholics at times when other alcoholic beverages are not available. It causes blindness (optic atrophy) and death due to its toxic effect on the heart muscle. It was used illicitly during the prohibition years in the USA (1919–1933) – when it caused many deaths due to its cardiac toxicity, and many others suffered blindness. It is still occasionally used when ethanol is not available, in places such as Saudi Arabia and the Yemen.*

The next alcohol in the chemical structure is ethyl alcohol, or ethanol (C_2H_5OH). Ethanol is found in all alcoholic beverages, e.g. beer, ale and cider; the concentration of alcohol is usually less than 8 per cent. In wines, e.g. champagne, muscatel and sherry, the concentration varies from 10–25 per cent, depending on whether or not the wine is fortified by the addition of distilled spirits.

Distilled spirits contain the highest concentration of alcohol, as they are prepared by distillation. Whisky, brandy, rum and gin represent this group and contain 40–50 per cent alcohol. One hundred proof means an alcoholic beverage that contains 50 per cent alcohol by volume.

The first man to distill alcohol was Jabir ibn Hayyan, in Bagdhad, in 185 HIJRAH (AD 800).[1] The word 'alcohol' is derived from the Arabic word *al-Ghul*, meaning something that intoxicates or destroys the brain. Whenever the word alcohol is used in everyday language, it usually refers to ethyl alcohol or ethanol.

Pre-Islamic misconceptions of alcoholic beverages

The Arabs in *Jahiliya* (pre-Islam) used alcohol to boost courage and benevolence. The poet of Prophet Muhammad (PBUH), Hassan ibn Thabit al-Ansari, before Islam, said, 'When we drink liquor we become like kings [in our benevolence] and during fight we become lions who never waver or falter from confrontation.'

The following traditional sayings and deeds of the Prophet Muhammad (PBUH) illustrate the deeply-rooted beliefs in the medicinal powers of liquor held at the time of the Prophet:

1. Wa'il al-Hadrami related that Tariq ibn Suwid said to the Prophet: 'O Messenger of Allah! In my land there are vineyards and

* Many incidents of methanol intoxication occur in Arabian Gulf countries, where ethanol is illicit, and cologne containing methanol is imbibed, resulting in blindness and death. In India, hundreds died in May 1992, due to drinking adulterated liquor which contained methanol.

we make wine and drink it.' To which the Prophet (PBUH) said: 'Do not drink from it.' Tariq then said, 'We use it as a cure for the sick.' The Prophet answered, 'It is no cure. It is itself a disease.'[2]

2. Some people from Yemen came to the Prophet (PBUH) and asked him to allow them to drink liquor made from wheat [ale] in order to fight the cold weather of their mountainous area and help them in their hard tasks. The Prophet asked if the liquor was intoxicating. The man who spoke for the Yemeni delegation (Daylam al-Himyairi) said it was. The Prophet answered: 'Then you have to stop drinking.'[3]

3. The Prophet (PBUH) said, 'Allah has sent down both the disease and the cure and He has appointed a cure for each, so treat yourself medically but use nothing unlawful.'[4]

It is clear from these *Ahadith* that the Prophet Muhammad (PBUH) had emphatically denied any medicinal properties for liquor.

Misconceptions after Islam

In the light of this, it is surprising to find that misconceptions continued among staunch Muslims regarding the medicinal properties of liquor.

In his *Tafsir al-Qur'an al 'Axim (Explanation of the Holy Qur'an)*, the renowned and highly-esteemed Ibn Kathir al-Dimishqi said: 'The evil of liquor is in "religion" [from the religious point of view]. The benefits of liquor are: it helps a) the health of the body; b) the digestion of food; c) excretion of obnoxious material from the body and d) sharpens the thinking of some brains. Besides, it gives the sense of pleasure which Hassan ibn Thabit has proclaimed in his poetry before Islam.'[6]

Even great mediaeval Muslim physicians and philosophers, such as Abu Bakr al-Razi and Ibn Sina, were commending liquor in moderation to maintain good health. Abu Bakr al-Razi, in his book *The Benefits of Food* said, 'The intoxicating liquor has the advantage of heating the body, helping digestion of food in the stomach, its delivery to the liver where it is well-digested. Henceforth, it helps its distribution to the rest of the body via the various blood vessels. Liquor quenches thirst, especially if it is mixed with water. It makes the body fertile, especially if it is taken with good, nutritious meals. It also gives the body a good healthy colour and helps to push the harmful excreta out of the body. Therefore, it is a great asset and a big assistance in keeping good health.'[7]

Imam Ja'far al Sadiq, a descendant of Prophet Muhammad (PBUH), was asked by one of his disciples to drink the intoxicating liquor

prescribed by a physician for his bleeding piles. The Imam refused, saying, 'God has never made your remedies in things that He has prohibited.' He also emphatically refused the idea of dissolving the ingredients of medicine in alcohol (Imam Ja'far lived in the second Hijri century – the eighth century AD).[4] The majority of the Islamic jurists took the same stance held by Imam Ja'far al-Sadiq. Ibn al-Qayyim, one of the renowned jurists of the eighth Hijri century (d. 751 AH), wrote many a chapter in his books to deny the medicinal uses of alcohol claimed by the physicians of his era. In his book *Al-Tibb al-Nabawi* (*The Medicine of the Prophet*), he stated the following argument against health-procuring properties of liquor: 'Liquor drinking is a cause of disease, as has been stated by Prophet Muhammad, and therefore it cannot be allowed to be used as a remedy. It causes the nature of man and his soul ill-effects. The nature of man is greatly affected by the nature of the drug used. If the drug is bad, like liquor, then the nature will be badly affected. This is why God has prohibited the use of bad food (e.g. pork, carcasses, blood), bad liquor and even bad clothing, because the psyche is affected deeply by the nature of bad food, drink or clothing.'[5]

There is a truism – 'we are what we eat' – which illustrates the deeply-integrated effects of the food and drink we consume. Food and drink is transformed within the human body into the energy we need by the process of catabolism, the rebuilding of lost and degenerated tissues and cells; and by the process of growth, well-manifested in children, which is the process of anabolism. Small wonder, therefore, to find good or deleterious effects on our bodies and souls ensuing from the food and drink we consume.

The same explanation was given by Ibn al-Qayyim to his contemporaries. He was emphatically denying the benefits of alcohol claimed by al-Razi and Ibn Sina and the whole medical profession of his day. In his time, there was little proof for his belief except that it was so clearly stated by the Prophet (PBUH). As a firm believer he argued extremely well against liquor, using all his intellectual and superb semantic powers.

It is therefore astonishing to find a contemporary and well-respected 'Faqih' [Jurist] claiming that drinking liquor is permissible for a man who becomes ill in cold weather, or who suffers from angina pectoris, or a heart attack, provided it was advised by his doctor.[9] The majority of the Muslim jurists agreed that liquor should never be used as a drug to treat disease, nor to give warmth in cold climates; neither should it be allowed to quench thirst.

Imam al-Nawawi[7] (seventh century AH/thirteenth century AD), in

his reference book *al Majmu'o,* gave the different opinions of the Muslim jurists regarding the drinking of alcohol as a remedy. The majority of jurists – Al Jumhúr – never allowed the use of liquor for any reason, including its use as a remedy or to quench thirst, even if there was no fluid permissible to drink. A few jurists allowed the use of alcohol as a remedy, and to quench thirst if no other permissible fluid was available. Some allowed its use as a remedy, but not to quench thirst, and others allowed its use to quench thirst only provided that there was not permissible fluid available.

But the jurists *did* allow the use of alcohol as a solvent for drugs that will not dissolve in water. Al-Khateeb al-Shirbini stated in his reference textbook *Muqhni al-Muhtaj:* 'The use of liquor as a remedy is prohibited by our religion. However, the use of drugs which have been mixed with liquor as a solvent is another matter. It is permissible to use that drug provided the liquor [alcohol] used is very small in quantity and provided that a competent good Muslim physician has prescribed it.'[11]

The use of alcohol as a remedy in today's medicine has been abandoned except for its use as a topical disinfectant. It is also occasionally used as a local injection to destroy a nerve ganglion causing great pain. However, the use of alcohol as a solvent for many drugs is not uncommon even today.

The medical and pharmacological professions in the Muslim world are strongly urged to replace the drugs containing alcohol with others that are alcohol-free. This is not very difficult to accomplish, if co-operation and meticulous work are begun. Most of the drugs containing alcohol are not essential and can be easily replaced by others. The use of alcohol as a disinfectant is not really necessary; there are many alternatives available. In any case the external use of alcohol is not prohibited by Muslim jurists.[12]

Aphrodisiac effect of alcohol

Alcoholic beverages are still used by laymen because they are believed to have an aphrodisiac effect, a claim that was refuted by the renowned English poet, Shakespeare, who said, 'It provokes the desire, but takes away the performance.'[13] Nevertheless, this misconception continues because of the many sexual crimes which are committed under the influence of alcohol. Fifty per cent of all rapes are committed under its influence.[14] Crimes of incest are reported to occur mainly under the effects of intoxicating liquor.[15] The force of advertising, which connects liquor with manliness and sexual prowess, is so strong that it promotes the mistaken concept, especially

among teenagers, that alcohol enhances libido and sexuality. But the reality is quite the opposite – the cumulative effect of alcohol on sex is deleterious.

Alcohol acts as a direct toxin to the testicles where the male sex hormones and semen are produced.[16] The autonomic nervous system, which controls erection and ejaculation, is also affected by chronic consumption of alcohol. In addition, the affected liver of the alcoholic is incapable of destroying the oestrogenic hormones normally produced by the male suprarenal gland. This results in decreased libido, impotence and gynecomastia.[17,18]

In the female, the deleterious effects of alcohol are well-manifested in irregularities of menses, decreased libido and foetal-alcohol syndrome.[19] The foetus of the alcoholic mother suffers great risks, which are summarized in Table I.[20,21] A review of alcohol effects on reproduction functions has recently been published.[22]

Table I.
The Foetal-Alcohol Syndrome

Microcephaly
Micrognathia
Microphthalmia
Cardiac defects
Growth retardation
Mental impairment
Increased incidence of abortion

Alcohol as an aperitif

Alcoholic beverages were, and still are, used as an aperitif. Even al-Razi, the great mediaeval Muslim physician, believed in the digestive and aperitif function of alcohol. Alcohol, in concentrations of less than 8 per cent, does increase the secretion of saliva and gastric hydrochloric acid. However, if ingestion of alcohol is repeated, this effect is lost.

Alcohol and the oesophagus

Many studies have shown that both acute and chronic administration of alcohol results in oesophageal motor dysfunction causing mild dysphagia and gastro-oesophageal reflux.[23] This results in chronic oesophagitis[24] and Barrett's oesophagus.[25]

The treatment for oesophagitis in the alcoholic is, obviously, abstention from alcohol, plus any anti-reflux regimen. The most important complication that may arise from chronic alcohol intake is

the development of cancer of the oesophagus.[26,27] Whisky drinkers are at greatest risk, but even wine and beer drinkers are at much greater risk than non-drinkers. Alcohol combined with tobacco increases the risk of developing cancer considerably.[23]

Alcohol and the stomach

Since the classic observation of Beamont in 1833, who noted acute mucosal changes following alcohol consumption by a patient who had a gastrostomy following a gunshot wound, the deleterious effects of alcohol on gastric muscosa are well-recognized by the medical profession.

Small concentrations of alcohol (less than 8 per cent) stimulate the acid secretion from the gastric mucosa of dogs. However, this stimulation is transient and weak. In man, there is as yet no evidence of a clinically significant nature that alcohol affects gastric acid secretion.[28] The gastric mucosal barrier which protects it from many harmful substances ingested with food, is liable to destruction under the effect of alcohol.[29] It is generally accepted that ethanol is disruptive to the gastric mucosal barrier.[23]

Alcohol induces acute gastritis and chronic gastritis.[31] It also affects critically the pancreas, the intestines, and the liver.[32,33,34] Therefore, the ingestion of alcohol does not, in fact, help digestion. On the contrary, it destroys the digestive system from the salivary glands, down to the oesophagus, stomach, intestines, pancreas and the liver. The incidence of cancer of the digestive tract, especially the oesophagus, intestines and liver, are markedly increased in alcoholics, compared with the general population.[35]

Alcohol and the cardiovascular system

Alcohol was considered a stimulant to cardiac muscle and a dilator of its vessels. But, in fact, alcohol is a directly toxic substance to the myocardium, causing cardiomyopathy. The heart becomes flabby and fails in its functions, resulting in heart failure and death.[36] Beriberi, a disease due to thiamine (Vitamin B_1) deficiency, is not uncommon in alcoholics.[37] Beriberi also causes heart failure.[38] However, unlike alcoholic myopathy, it does respond rapidly to treatment with thiamine, diuretics and cardiac glycosides. Alcohol causes hypertension which, in turn, is detrimental to the heart and its circulation.[39,40] Alcoholics also suffer an increased incidence of strokes.[41–43] The alcoholic is also liable to have increased fats in his blood (hypertriglyceridoemia) which, with other factors, results in atherosclerosis.[44]

Although alcohol is a vasodilator for many blood vessels, especially those in the skin, it does not have this effect on the coronary blood vessels which supply the heart with nourishment and oxygen.[45] It is clear, therefore, that alcohol is not a good remedy for the heart or its narrowed vessels. On the contrary, its deleterious effects on the cardiac muscle indicate that it is dangerous to treat patients having heart disease with alcohol. In fact, it is considered a major cause of heart disease in countries with high consumption of alcohol.[46,47]

Alcohol and cold climates

Since the time of the Prophet (PBUH) many people have drunk alcohol in the mistaken belief that it offers protection from the effects of cold weather.

Alcohol dilates the cutaneous blood vessels, which provides a sense of warmth. It also abolishes the shivering reflex, which is a protective mechanism of the body against cold. Therefore, if a person drinks alcohol and is exposed to cold weather, as often occurs at Christmas and New Year festivals, such a person will be greatly endangering his health – being liable to lose body heat and suffer hypothermia.[48-50] Alcohol abuse is by far the most common cause of accidental hypothermia.[51] The level of consciousness declines progressively with decreasing body temperature; pupils contract and tendon reflexes are lost. Alcoholism predisposes to hypothermia by its direct vasodilating effect, coupled with its depressant effect on the central nervous system and the attendant increased risk produced by environmental exposure. Mortality resulting from accidental hypothermia ranges from 30–80 per cent.[52]

Alcohol and the brain

The misconception of 'sharpening some brains' by alcohol is not only an old myth, it is also a modern one. Many people feel that they become sharp and witty when drinking alcohol.

Alcohol is never a stimulant of the nervous system; it is a depressant, with higher functions being affected first.[20,52] The earliest symptoms of intoxication are those of altered behaviour. In larger doses, it produces irregularities in conduct: a person becomes depressed or excited, depending on his personality. The higher cortical functions are inhibited, thus normal restraints are relaxed.[20,52,53]

The ability to carry out co-ordinated and complex motor activity also is progressively impaired. It is at this stage that crimes and traffic accidents occur. The risk of traffic accidents rises exponentially at blood alcohol levels above 50mg per cent. When the blood alcohol

level reaches 200mg per cent (equivalent to consuming six pints of beer) the risk of accident is a hundred-fold greater than that for a non-drinker.[20]

WHO statistics suggest that alcohol is involved in at least 50 per cent of all traffic accidents, worldwide. WHO also reports that 86 per cent of all murders are committed under the influence of alcohol, as are 50 per cent of all rapes.[14,20] Other findings are that 74 per cent of wife-beaters are heavy drinkers, and that at least 50 per cent of those imprisoned in the UK have significant alcohol problems.[14,20]

The effect of alcohol on speech is manifested first by loss of restraints and increased talkativeness. Later, speech becomes slurred. Alcohol causes the conjunctiva to become congested and the pupils to become dilated, but still reactive to light. Nystagmus and ataxia are invariably manifested. If the dose of intoxicant is great enough, unconsciousness follows. This condition is also usually associated with vomiting; which, in a comatose patient whose cough reflexes are paralysed, may result in lung abscess, pneumonia or even death from suffocation.[20,51,54] An American girl, Karen Ann Quinlan, lost consciousness following an alcohol binge in 1971, remained in a coma for ten years and died on 12 June 1985. Her story demonstrates dramatically the horrifying depressant and inhibitory effect of alcohol on the central nervous system.

The chronic consumption of alcohol causes irreversible damage to the brain and the rest of the nervous system. Cerebral atrophy and dementia are not uncommon in chronic alcoholics.[20,51,52]

In conclusion, alcohol has a strong depressant and inhibitory effect on the brain and the whole nervous system. The mistaken belief that it stimulates the brain has no scientific basis. Unfortunately, it is a myth that lingers on and refuses to die.

In 'Managerial hypochondria', *Medicine Digest*, London, October, 1986, the authors, Professor Qais Ghanem, FRCPC, and Dr I. Ghanem, FBIM, Ph.D.(Lond), emphasize the need to overcome the shame barrier in the Mid-East which prevents many Arabs from using 'drying-up' centres. Detoxification is an answer but it starts with coming to terms with a harsh reality.

REFERENCES

1. Albar, M., *al-Khamr bayn al-Tibb Wa-l-Fiqh.* Jeddah, Saudia Publishing House, 7th edn. Jeddah 1986: 30.
2. Sahih Muslim, *al-Jamie al-Sahih Kitab Al Ashiribah (Book of Drinks);* prohibition

of the use of wine as medicine; vol.3, p.1099; Hadith No.4891. Trans. Abdul Hamid Siddique, Sh. Muhammad Ashraf Publishers, Lahore, Pakistan 1987.
3. Sunan Abu Daw'ud, *Kitab Al Ashiribah (Book of Drinks)*, chap.1386, prohibition of intoxicants, vol.3, p.1044, Hadith No.3675. Ahmad Hasan (ed.), Sh. Muhammad Ashraf Publishers, Lahore, Pakistan 1984.
4. Sunan Abu Daw'ud, *Kitab al-Tibb (Book of Medicine)*, chap.1469, disapproved medicines, vol.3, p.1087, Hadith No.3865. Sh. Muhammad Ashraf Publishers, Lahore, Pakistan 1984.
5. Ibn al-Qayyim, Al-Tibb al-Nabawi, Dar al-Turath, Cairo, Qalaagia, A.M. (ed). 1978:222–225.
6. Ibn Kathir al Dimishqi, Tafsir AlQur'an al Azim, Beirut, Dar AlFikr 1970, Sura 2, *The Cow*, verse 219.
7. Al-Razi, A., *Manafi al-Aghdhiyah*, 'The benefits of food'. Beirut, Dar Ihya al-ulum 1982: 62.
8. Bayduon, L, *Alcohol W-al-Mukhaddirat*; Damascus, Dar ibn zaydun 1971: 53–54.
9. Sayyid Sabiq, *Fiqh al-Sunnah*, Beirut, Dar Al-Fikr 5th edn. 1982; 2:339–340.
10. Al-Nawawi, M., *Al-Majmuh, Sharh al-Mohzab*. Maktabat al-Irshad, ed. al-Muttiee, Saudi Arabia (nd). 9:42–43, (Arabic).
11. Al-Khateeb-al-Shirbini, M., *Mughni al-Muhtaj*; Beirut, Dar al-Fikr 1978; 4:188.
12. Al-Shukani, M., al-Sayl al-Garrar 'Ala Hada'iq al-Azhar. Cairo, Al-Majlis al-'a'la Lil-Shu'un al-Islamiyyah, 2nd edn. 1983; 1:35–36.
13. Shakespeare, W., *Macbeth*, Act 2, Scene 3.
14. *Daily Mail*, London 24 June 1980.
15. *The New Encyclopedia Britannica*; Chicago, Encyclopedia Britannica, Inc., 15th edn. 1982; 16:607.
16. North, R.H., Walter, R.M., The effects of alcohol on endocrine system. Symposium on ethyl alcohol and disease. *Med. Clin. N.Am.* 1984; 68:133–146.
17. Gordon, D., Olivo, J., Rafir, R., *et al.*, Conversion of androgens to estrogens in cirrhosis of the liver. *J. Clin. Endocrinol. Metabl.* 1982; 55:583–6.
18. Van Thiel, D., Loriaux, D., Evidence of adrenal origin of plasma estrogens in subjects with liver disease. *Gastroenterology* 1975; 69:819.
19. Van Thiel, D., Gavaler, J., Lester, R., et al., Alcohol induced ovarian failure in the rat. *J. Clin. Invest.* 1978; 61:624–28.
20. Brunt, P., Alcoholism as a medico-social problem. In: *Topics in Therapeutics*. Vere, S.D. (ed.), London, Roy. Coll. Physicians, Pittman Medical Pub. Co. 1978; 124–135.
21. Clarren, S.K., Smith, D.W., The fetal alcohol syndrome, *N. Engl. J. Med.* 1978; 298:1063–7.
22. Fadel, H.E., Hadi, H.A., Alcohol effects on the reproductive function. *The Encyclopedia Handbook of Alcoholism*. Pattison, E.M., Kaufman, E. (eds), New York; Gardner Press Inc. 1982; 293–300.
23. Burbige, E., Lewis, R., Halsted, C., Alcohol and the gastrointestinal tract. *Med. Clin. N.Am.* 1984; 68(1):77–89.
24. Small, M., Longharinia, Zamcheck, N., Disturbances of digestive physiology following acute drinking episodes. *Am.J.Med.* 1959; 27:575–585.
25. Martini, G., Ethanol abuse and Barrett's esophagus. *N.Engl. Med.* 1976; 295:1322.
26. Tuyus, A., Cancer of the esophagus: further evidence of the relation to drinking habits in France. *Int. J. Cancer* 1970; 5:152–6.
27. Tuyus, A., Epidemiology of alcohol and cancer. *Cancer Res.* 1979; 39:2840–3.
28. Cooke, A.R., Ethanol and gastric function (letter). *Gastroenterology* 1972; 62:501–2.

29. Fromm, D., Robertson, R., Effects of alcohol on ion transport by isolated gastric and esophageal mucosa. *Gastroenterology* 1976; 70:220–5.
30. Gottfried, E., Korsten, M., Leiber, C., Alcohol induced gastric and duodenal lesions in man. *Am.J. Gastroenterology* 1978; 70:587–592.
31. Geoke, M., Ethanol and the pancreas. *Med. Clin. N.Am.* 1984; 68(1):57–76.
32. Linschcer, W., Malabsorption in cirrhosis. *Am. J. Clin. Nutr.* 1970; 23:488–492.
33. Mezey, Jow, Salvia, *et al.* Pancreatic function and intestinal absorption in chronic alcoholism. *Gastroenterology* 1970; 59:657–664.
34. Pimstone, N., French, S., Alcoholic liver disease. *Med. Clin. N.Am.* 1984; 68(1):39–56.
35. Breeden, J., Alcohol, alcoholism and cancer. *Med. Clin. N.Am.* 1984; 68(1):163–178.
36. Segel, L., Klausner, S., Gnadt, J., Amsterdam, E., Alcohol and the heart. *Med. Clin. N.Am.* 1984; 68(1):147–162.
37. Maguire, R., Acute dilation of the heart produced by alcoholism. *BMJ* 1987; 1:1215.
38. Blaukenhorn, M., Vilterc, Scheinker, L., *et al.*, Occidental Beri Beri heart disease. *JAMA* 1946; 131:717–726.
39. Kaysen, G., Noth, R., The effects of alcohol on blood pressure and electrolytes. *Med. Clin. N.Am.* 1984; 68(1):221–246.
40. Celentano, D., Mertinez, R., McQueen, D., The association of alcohol consumption and hypertension. *Prev. Med.* 1981; 10:590–602.
41. Taylor, J.R., Alcohol and strokes, *N. Engl. J. Med.* 1982; 306:1111.
42. Hillbom, M., Kaste, M., Does ethanol intoxication promote brain infarction in young adults? *Lancet* 1978; 2:1181–3.
43. Lee, K., Alcoholism and cerebrovascular thrombosis in the young. *Acta Neurol. Scand.* 1979; 59:270–4.
44. WHO Technical Report, Problems related to alcohol consumption. WHO 1980, 650:21.
45. Askanas, A., *et al.*, The heart in chronic alcoholism: a non-invasive study. *Am. Heart J.* 1980; 99:9–16.
46. Ahmed, S., Levinson, G., Regan, T., Depression of myocardial contractility with low doses of ethanol in normal man. *Circulation* 1973; 48:378–385.
47. Alderman, E., Coltart, D., Alcohol and the heart. *B.Med.Bull.* 1982; 38:77–80.
48. Weyman, A., Greenbaum, D., Grace, W., Accidental hypothermia in an alcoholic population. *Am.J.Med.* 1974; 56:13–21.
49. Reuler, J., Hypothermia, pathophysiology, clinical settings and management. *Ann. Intern. Med.* 1978; 89:519–527.
50. Rischbeck, K. Simon, R., Neurological manifestations of accidental hypothermia. *Ann.Neurol.*1981; 10:384–7.
51. Nakada, T., Knight, R., Alcohol and the central nervous system. *Med. Clin. N.Am.* 1984; 65(1):121–123.
52. Millman, R., Central nervous system depressants. In: *Cecil Loeb Textbook of Medicine*, 15th edn. Philadelphia. Saunders Co. 1979; 698–700.
53. Jaffe, J., Drug addiction and drug abuse. In: Goodman and Gilman, T*he Pharmacological Basis of Therapeutics*, 4th edn. London. Macmillan Co., 1970; 291–292.
54. Krumpe, P., Cummiskey, J., Lillington, G., Alcohol and the respiratory tract. Med. Clin. N. Am. 1984; 65(1):201–220.

CHAPTER FIVE

AIDS PREVENTION: AN ISLAMIC APPROACH

Introduction

The Acquired Immune Deficiency Syndrome – AIDS – has progressed relentlessly since its first official debut in 1981. No nation or country is exempt from its serious medical, social and ethical sequelae. By May 1991, the World Health Organization estimated the total number of AIDS cases to have reached 1.5 million worldwide, with around ten million people infected with HIV, the culprit causing AIDS.

It is hardly surprising to find that AIDS has spurred the most intensive research in all its aspects. But despite tremendous strides and advances in understanding the biology of the infective agent, its epidemiology and immunology, very little was achieved in its management and prevention. The use of Zidovudine (AZT) and management of opportunistic infections, especially *pneumocystis carinii*, with cotrimoxazole has effectively prolonged the life-span of AIDS patients – but as yet there is no cure on the horizon.

The cornerstone of prevention policy in most countries lies in the search for an effective safe vaccine, educating the public about AIDS and its transmission, propagating the use of condoms and 'safe sex', and testing of blood and blood products prior to transfusion and injections of blood products (anti-haemophilic globulin AHG).

AIDS is a communicable venereal disease, and the majority of cases are due to sodomy, fornication, adultery and promiscuity. Moralizing about AIDS or other sexually-transmitted diseases is a taboo in the present-day culture. Hence, the real issue in AIDS prevention is not properly addressed. Islam, as well as other religions, confronts the root of the problem, and henceforward its suggestions for a solution.

Epidemiology of AIDS

AIDS is the most panic-inducing disease of the twentieth century. Ever since its first occurrence in the USA in 1981, it has spread relentlessly across boundaries and continents. Although nowhere has escaped the invasive disease, the brunt of the attack is far from equal. The highest number of reported cases came from the USA, followed by Subsaharan Africa. Table I shows the cumulative reported cases from 162 countries from different continents by 1 April 1991.[1,2]

Table I.
Cumulative number of cases by 1 April 1991

Americas (mainly USA)	60.0%	207,364
Africa (mainly Subsaharan)	24.8%	85,728
Europe (mainly W. Europe)	13.9%	48,329
Oceania (mainly Australia and New Zealand) and Asia	1.3%	4,787
		346,208

There is considerable under-reporting, but WHO estimates the total number of AIDS cases to have reached one million adults and half-a-million children by April 1991 – with 80 per cent of the adults and 90 per cent of children being in Africa.[3-8] Those infected with HIV (Human Immunodeficiency Virus = AIDS Virus) who are only harbouring the virus without any symptoms or signs of AIDS are estimated at 8 to 10 million. The incubation period may be as long as ten years, and it is not known how many will be stricken by the disease. Table II shows HIV estimated cumulative infection worldwide.

Table II.
HIV infection cases by end of 1990[9,10]

Total number	8–10 million
Adult females	3 million (2.5m. in Africa)
Children	0.5 million

In 1990–91, 500,000 persons were estimated to be infected with HIV, of whom 200,000 were expected to be women; and by the year 2000, the ratio of men and women infected will equalize.[9-11] The number of children who were infected vertically while in utero reached one million by 1992. The reported cases of AIDS in Arab countries at

the end of 1992 was 1296 cases, but WHO estimates HIV infection in the Arab world to have reached 75,000.[9-11] At the turn of the century, WHO projects a cumulative total of 30 million adults and 10 million children to be infected with HIV and a cumulative total of up to 10 million cases of AIDS and 10 million orphans. The majority of these cases will be in the developing countries.[5]

Modes of transmission of HIV[10-15] Sexual intercourse

By far the most important mode of HIV is by sexual intercourse, which accounts for more than 90 per cent of cases. Both anal and vaginal intercourse are equally important, with the first (i.e. anal) being the most important in the USA and Western countries; while the second (i.e. vaginal) being the culprit in Africa (Subsaharan) and Asia (India and Thailand). The World Health Organisation projects that by the year 2000, up to 90 per cent of all HIV infections in the world will be transmitted heterosexually (i.e. by vaginal route).[10]

Epidemiological and virological studies have confirmed the transmission of HIV via vaginal intercourse from an infected male to female, and vice versa. The risk of HIV transmission from a single episode of vaginal or anal intercourse increases by ten to twenty-fold in the presence of other sexually-transmitted diseases (STDs), especially those associated with genital ulcerations – e.g. herpes, syphilis, chancroid. Even chlamydial infection, which is usually asymptomatic, results in microscopical cervical ulcerations which facilitate the transmission of HIV.[14] Conversely, HIV infection promotes the spread and complications of other STDs – especially genital herpes, chancroid and syphilis.[14]

The most important groups affected by AIDS who are, therefore, the major source of infection to the community are:

1. Homosexuals: The AIDS epidemic started in the homosexuals of San Francisco and New York. HIV antibody tests on stored blood of homosexuals in San Francisco showed a steady rise from 4 per cent seropositive in 1978, to 68 per cent in 1984.[11-13] The AIDS epidemic did not begin to appear until the HIV seropositive reached 20–30 per cent of the homosexual community.[11-13]

Homosexuals constitute the most important group inflicted with AIDS. In the USA, 66–70 per cent of AIDS cases are homosexuals, while in the UK they constituted 87 per cent. Similar figures were found in Canada, Western Europe, Australia and New Zealand. The receptive partners of ano-rectal intercourse are more likely to be affected.[14] In San Francisco and New York, AIDS is the most important cause of premature death in young men.

2. Prostitutes: Prostitutes are the most vulnerable group and are heavily-inflicted with HIV infection and AIDS disease. They feature prominently in Subsaharan Africa, India and Thailand, and are the main source of infection in these areas. They are also becoming important in the slum areas of the big cities of the West, especially in the USA.

The prevalence of HIV infection has reached 80–90 per cent of the prostitute population in many cities in Africa.[13] In Butare, Rwanda, 88 per cent of prostitutes were seropositive, with similar figures in Nairobi (Kenya), Zaire and Zambia.[15] In Bombay (India) and Bangkok (Thailand), the seropositives are increasing rapidly among prostitutes from 10 per cent to 70 per cent (1987 to early 1990).[10] A study on prostitute clients showed that 30 per cent are already infected with HIV.[13]

3. Contaminated blood and blood products: Blood transfusion and haemophiliacs who are injected frequently with blood products (AHG), can transmit HIV. It constituted five per cent of total AIDS cases in the eighties. However, the widespread testing of the blood for HIV antibodies (Elisa test) prior to transfusion has drastically reduced the risk of HIV infection. Similarly, heating blood products (AHG) to 60°C has almost eliminated HIV risk of infection to haemophiliacs.

In the Arabian Gulf countries and Saudi Arabia, where untested blood was imported from the UK and USA up to 1986, many cases of HIV infection and AIDS occurred due to blood transfusion. The source of the blood was mainly the most vulnerable groups, viz: homosexuals and IV drug users.

With the advent and widespread use of blood testing (Elisa) for HIV, this risk has been dramatically reduced, except in rural areas in third world countries where it is not yet available.

4. Contaminated needles and instruments: intravenous drug users (IVDUs) are a very important group who are vulnerable to HIV infection by sharing their syringes and needles. The use of crack cocaine in exchange for sex has caused an increased incidence of AIDS and sexually-transmitted diseases (STDs) among black women in the slums of the big cities of the USA.[14]

The seroprevalence (HIV positive) has increased alarmingly in some areas among IV drug users. Table III shows difference of seropositivity among IVDUs in different localities. The seroprevalence increased dramatically from 6 per cent to 76 per cent in six years in Southern Italy,[12] and it rose from one per cent late in 1987 to 50 per cent in 1989 in Bangkok (Thailand).

In Africa and many third world countries, disposable syringes and

needles are not available except in some urban hospitals. The use of contaminated syringes and needles is a real threat to public health and should cause grave concern.

Tattooing, cupping and other folk medicine which involves pricking and blood-letting, pose another danger and can spread HIV infection.

Needle-stick injuries and cuts during surgical, dental or orthopaedic intervention is another source, albeit small, of HIV transmission to doctors, surgeons, nurses, laboratory technicians and health personnel.

Table III
HIV Seroprevalence among IVDUs[4]

High Seroprevalence (50% or more)	Moderate (20–49%)	Low (5–19%)	Very Low (<5%)
Manhattan, NYC, (USA)	Boston (USA)	Chicago (USA)	New Orleans (USA)
Northern New Jersey (USA)	Amsterdam (Holland)	Washington (USA)	Glasgow (UK)
Southern Italy	Dublin (Ireland)	Copenhagen (Denmark)	Yugoslavia
Spain	Zurich (Switzerland)	Stockholm (Sweden)	Southern New Jersey (USA)
Edinburgh (UK)	Berlin (Germany)		
Bangkok (Thailand)			
Bombay (India)			

5. Organ and tissue donation: There are many reported cases of seroconversion after organ transplantation of kidneys, corneas, skin, bone marrow, etc.[16] In Saudi Arabia and the Gulf area, there are fourteen cases of AIDS who acquired the disease through kidney transplantation in Bombay (India).[17]

Artificial insemination and *in vitro* fertilization (IVF) are another source of HIV transmission.[18] However, the widespread Elisa testing for HIV prior to organ or tissue donation has markedly reduced this hazard.

6. Mother to child: Vertical transmission in utero and possibly at birth, plays a major role in infecting children in Africa. There are already one million children infected with HIV, as estimated by the WHO in 1992.[19]

The risk of an HIV-positive pregnant woman transmitting HIV to her unborn child is estimated at 25–30 per cent. HIV was isolated from milk, but breast-feeding is a very minor source of transmitting HIV.

Though HIV was found in body secretions such as saliva, tears, urine and breast milk – only semen, cervical secretions and blood (and blood products) are the main sources of HIV transmission.

Epidemiological patterns of HIV infections and AIDS cases[3-12]

WHO has described several broad distinct patterns of HIV infection and AIDS cases, viz:

Pattern 1: mainly affecting homosexual men (65–85% of cases) and IV drug users (15–20%). Heterosexual transmission accounts for a small portion (3–7%). This pattern is seen in the USA, Western Europe and Oceania (Australia and New Zealand).

Pattern II: is found predominantly among sexually-active heterosexuals. It is typically found in Subsaharan Africa and some parts of the Caribbean.

Pattern III: includes Asia, North Africa and the Middle East, where HIV infections and AIDS cases are relatively low. The main mode of transmission is via heterosexual intercourse and contaminated blood and syringes. The cumulative total reported cases of AIDS to WHO Eastern regional office as at 3 December 1989, was 430 cases.[20] The total cumulative reported cases of AIDS in Arab countries were 1296 by the end of 1992. However, there is an upsurge of HIV infection and AIDS cases in India and Thailand. In Bangkok (Thailand) and several Indian cities, HIV infection has increased sharply from 10 per cent to 70 per cent in just a couple of years (late 1987 to early 1990). Similarly, IV drug users in Bangkok showed a steep rise of seropositivity from one per cent to 50 per cent during the same period.[11] The Thai AIDS epidemic is now about ten times greater than the epidemic in the UK.[4]

The present strategy of AIDS prevention[21-23]

The cornerstone policy of AIDS prevention in most countries lies in the search for a safe, effective vaccine, laboratory tests of blood and blood products, and meticulous care during medical, dental and surgical operations, educating the public into a total awareness of AIDS, and propagating the use of condoms and 'safe sex'.

Since AIDS is a venereal disease and the majority of cases are due to sexual intercourse (vaginal or anal), change of sexual behaviour is of paramount importance in combating AIDS transmission.

In Western countries the special risk groups receive the utmost attention. The homosexuals, bisexuals, and IV drug users are the most vulnerable. The following advice is offered:

1. Reduce the number of partners. Monogamy and fidelity are the aim, but if this fails try to limit the number of sexual partners.
2. Know the sexual history of your partner; i.e. if they are of the vulnerable group.
3. Use the condom: governments are paying for the condoms. The advertisement for condom-use has reached unprecedented levels.
4. Safer sex practices; e.g. dry kissing, masturbation, body rubbing, are encouraged.
5. Use disposable syringes and needles for IV drugs. No sharing should be allowed. It would be much better to change to sniffing, smoking or swallowing of drugs instead of injection (mainstream).
6. Counselling seropositive women on the risk of pregnancy and encouraging the use of contraceptives. If pregnancy occurs, the option of abortion is offered.
7. Meticulous care during laboratory and medical investigations and procedures.

But, unfortunately, it seems that these important measures are not fruitful enough. The AIDS epidemic has not been curbed as yet. Something else is still needed.

Why the present preventive measures have not succeeded in curbing and stemming the AIDS epidemic?

AIDS is a communicable venereal disease. The absolute majority of HIV infection and AIDS cases are due to anal or vaginal sexual intercourse.

Promiscuity, sexual permissiveness in the West, which spread worldwide, led to the 'sexual revolution' of the 1960s, which in turn led to the explosive increase of STDs and the emergence of new scourges. Not only the standard venereal diseases, viz: gonorrhoea, syphilis, chancroid, lymphogranuloma venerium – have increased, but new diseases appeared and predominated the arena. We now have chlamydia, genital herpes, genital warts, hepatitis B infection, and cancers of the cervix, vagina, anus and penis, which are caused by sexually-transmitted human papilloma virus (HPV), especially type (16, 18, 31).[14] AIDS appeared when seroprevalence reached 20-25 per cent among homosexuals in the USA (San Francisco 1980).[11-13]

The Prophet Muhammad (PBUH) alluded to this fact some 1400 years ago, when he said: 'If promiscuity and adultery spreads in a community then surely it will be followed by a surge of new epidemics, never known before.'[24]

It is clear from the epidemiology of AIDS that the most important groups which are affected by HIV infection and propagate it to the community are:

1. Homosexuals
2. Prostitutes
3. IV drug users

But surely these are not the only ones to blame? Promiscuity at large and the so-called permissiveness towards sex are at the root of the problem. The media convinced millions of the importance and usefulness of 'free sex'. Morality and fidelity were things of the past and should be abandoned, according to the new creed. Free heterosexual, bisexual and homosexual relations were praised and presented as the basic rights of every person in the community. As if that were not enough, the media, with the help of some well-known psychologists, propagated incest and sex with children; their motto being 'sex by eight or it's too late'.[25,26]

The disintegration of the family rôle and the tremendous change in the attitude of many churches also contributed to the 'sex mania' of the sixties. The Council of Churches in the UK deplored the attitude of the *Holy Bible* against sex, declared its blessing for premarital or extramarital sex, and called for more permissive measures for abortion and use of contraceptives for minors.[27]

Such an horrendous attitude greatly encouraged the promulgation of free sex societies and resulted in the surge of STDs and the appearance of new scourges.

Sodomy, adultery and fornication are no longer deplored. On the contrary, they are given new names (free sex) and encouraged. Nobody cares what the *Bible* and the *Qur'an* said about the people of Sodom and Gomorrah – who were boasting of their homosexuality and who, in consequence, were destroyed by the Lord who rained burning sulphur upon them, and completely annihilated their inhabitants, except Lot and his daughters.[28–30] The teachings of the *Old Testament* regarding sex were laughed at, even called cruel and barbaric. The stoning to death of those who commit adultery or sodomy is considered the most barbaric and inhumane act, even though proclaimed by the *Bible*.[21,22] Similarly, the teachings of Jesus in the *New Testament* were derided. Jesus said: 'You have heard that it was said do not commit adultery. But now I tell you: anyone who looks at a woman and wants to possess her is guilty of committing adultery with her in his heart. So if your right eye caused you to sin, take it out and

throw it away! It is much better for you to lose a part of your body than to have your whole body thrown into hell.'[33]

Religious teachings can stem STDs and AIDS

Sticking to religious teachings, whether in the *Bible* or the *Qur'an*, can curb the incessant spread of STDs and AIDS. Islamic teachings encourage early marriage. Premarital and 'extramarital' sex is deplored. Sodomy and adultery are punished along the same lines as those mentioned in the *Bible*, with one reservation – the actual sexual intercourse should be witnessed by four persons. This is, of course, almost impossible unless the intercourse has been carried out in the open. Fornication is punished by beating the offender with a hundred lashes, once the act is proved by four witnesses who testify to having seen the actual act of sexual intercourse.[34]

Slaves who were in a difficult position should never be stoned. The maximum penalty for them is fifty lashes.[35] If it is proven that the slave was forced into prostitution, she is not held to blame,[36] her master should be punished. In any case, Islam ended slavery *de facto*.

The Islamic teaching encourages the separation of the two sexes in education, work and places of worship (mosques). Women should not show their beauty to foreign men (i.e. all men except her husband or relatives within the prohibited degrees of marriage), and men should not look upon women with lust. Both men and women should keep their chastity.[37] Sexual desires should be channelled through marriage, which is considered as an act of worship.[38–40]

Pornography is not permitted, and those who try to promulgate obscenity in the community are harshly punished.[42] The Islamic Society should be kept clean.

Prostitution is banned, and those who run the business are harshly punished. The poor prostitutes who are forced into this dirty business are humanely treated. They are provided with decent jobs and a source of income from the Islamic government and community. They are not to be punished when they are forced by poverty or compulsion.[35] Once they proclaim their repentance and are clean, society should help them in their new lives and should be encouraged to marry them.[38]

Conclusion

AIDS is a sexually-transmitted disease, and the majority of cases are due to sodomy, adultery and fornication.

Unless the sexual behaviour of the whole community is changed to self-restraint and chastity, the spread of AIDS and other STDs will

continue unabated. Fidelity in marriage and a strong family life should be encouraged. Premarital and extramarital sex should be avoided, and sexual desires should be channelled through an early and healthy marital life.

The present destructive rôle of the mass media must change to a constructive one.

The rôle of education, as well as the rôle of family bonding, and a healthy family life is of paramount importance.

Propagating sex for fun and the exploiting of women by the media for advertising purposes should be discouraged.

Religion must play an important rôle in the campaign against promiscuity and should encourage virtuous attitudes and chastity within the community.

REFERENCES

1. WHO: AIDS update, cases reported as of 1 April 1991; WHO, Geneva.
2. La Vertu, D.S., AIDS Human rights and the World Health Organization. Global Expert Meeting. AIDS: a question of rights and humanity. Peace Palace, The Hague 21–24 May 1991.
3. Jallo, H., AIDS and human rights in the context of the African charter of human and peoples' rights. *vide supra.*
4. Mann, J., Human rights and priorities for HIV/AIDS prevention and care in the 1990s. *vide supra.*
5. Figuerca, J.P., The HIV/AIDS epidemic and the challenge to public health. *vide supra.*
6. De Jong, I., Formal Opening, Global Expert Meeting. AIDS: a question of rights and humanity. *vide supra.*
7. Roscam-Abbin, H., AIDS: a healthy approach. *vide supra.*
8. WHO: Current and future dimensions of HIV/AIDS pandemic, a capsule summary. WHO/GPA/SFI/90.2 Rev.1, September 1990.
9. Netter, T., World AIDS Day 1990. *World Health,* Nov–Dec. 1990; WHO Geneva: 27–29.
10. Chin, J., Challenge of the nineties. *ibid.*, 4–6.
11. Adler, M., AIDS – an introduction. *Medicine Int.* 1988; 56:2326–2329.
12. Adler, M., Development of the epidemic. In: Adler, M. (ed.) *ABC of AIDS, BMJ,* London 1988; 1–3.
13. Adler, M., Epidemiology of HIV infection. *J. Roy. Coll. Phys.* London 1988; 22(3):133–135.
14. Aral. S.O., Holmes, K.H., Sexually transmitted diseases in the AIDS era. *Scientific American* 1991; 264(2):18–125.
15. Nunn, P., McAdam, AIDS in Africa. *Medicine Int.* 1988; 57:2357–2360.
16. *Arab News,* 18 May 1991; No.172, last page (16), col.6.
17. Personal contact with Professor George Abouna, chairman of Middle East Society for Organ Transplantation; 11–15 March 1990, Kuwait.
18. Terwart, G.J., *Lancet* 1985; 2:581–584.

19. WHO: World AIDS Day 1990. *World Health* (Arabic) September–October 1990, WHO Geneva.
20. *Emirate Epidemiol. Bull.* 1990; 16: Tab.14, p.48.
21. Johnson, A., AIDS prevention and public health. *Medicine Int.* 1988; 56:2330–2333.
22. Johnson, A., Adler, M., Strategies for prevention. In: Adler, M., (ed.) *ABC of AIDS, BMJ* London 1988: 51–54.
23. Jeffries, D., Control of infection policies. *ibid.*, 44–46
24. Ibn Maja, *Sunan Ibn Maja*, Abdul Bagi, M.F., (ed.). Cairo. Issa Halebi Publishing Co. (nd). *Kitab Al Fitan (Book of Riots)* No.22.
25. *Readers Digest,* August 1983; Children for sale. The dark new world of pornography, p.52.
26. *Time Magazine,* 14 April 1980: Attacking the last taboo.
27. *ibid.*, 28 October 1966; p.38.
28. Book of Genesis 19:1–27. *Good News Bible*, Glasgow. The Bible Societies, Collins 1979.
29. *Holy Qur'an:* Sura *Hud,* chapter 11: *aya* 82, 83.
30. *ibid.*, Sura *Al Ankaput* , chapter 11: *aya* 29, 29.
31. Leviticus 18:1–30.*Good News Bible*, Glasgow. The Bible Societies, Collins 1979.
32. Deuteronomy 22:13–30. *vide supra.*
33. Matthew 5:27–30. *vide supra.*
34. *Holy Qur'an:* Sura *Al Nur*, chapter 24:2–4.
35. *ibid.*, Sura *Al Nissa*, chapter 4:25.
36. *ibid.*, Sura *Al Nur*, chapter 24:34, 34.
37. *ibid.*, 30, 31.
38. *ibid.*, 32.
39. *ibid.*, Sura *Ar-Rum*, chapter 30:21.
40. AlBukhari, *Al Jamie Assahih,* Cairo, *Kitab Asshab* 1376H, *Kitab Annikah (Book of Marriage).*
41. Muslim, *Al Jamie Assahih,* Dar Ihya Alkitab Al Arabia; Issa Babi Holabi, Cairo (nd). *Kitab Annikah (Book of Marriage).*
42. *Holy Qur'an.* Sura *Al Nur*, chapter 24:19.

CHAPTER SIX

ISLAMIC MEDICAL JURISPRUDENCE OUTLINE OF A SYLLABUS

Introduction

Islamic medical jurisprudence is not forensic medicine given an Islamic label. It certainly includes a lot of forensic medicine, but is not limited by it. It also includes a lot of medical ethics. Phenomenal advances in medicine, especially in the last two decades, have made the old medical ethical codes obsolete in many ways.

In the past, the main aim of medicine was to cure disease. Now medical techniques are called upon for purposes which influence the community as a whole, as much as it involves the individual; e.g. in matters related to contraception, sterilization, abortion and choice of sex.

On matters of life and death, sexual morality, abortion, *in vitro* fertilization, sperm, egg or embryo donation, surrogacy and genetic counselling; the clamour of opposing opinions arising from different camps in different countries is overwhelming. There is no general consensus of opinion in such matters, even among doctors. The lawyers, members of parliaments, the clergy, the media and the public at large, are all discussing these hair-raising contentious subjects. It is, therefore, of paramount importance for the practising Muslim physician to know at least the basic Islamic rules that regulate his profession.

It is true that new methods and techniques have no precedent, and this therefore makes it difficult for Islamic jurists to give clear-cut rulings. However, the jurists were very active over the last decade, in which they held many conferences, to which many doctors were called, to discuss issues such as brain death, abortion, contraception, milk banks, artificial insemination, *in vitro* fertilization, surrogacy and organ transplantation. This is an unexpected achievement, and

one which should greatly assist in formulating the rules regarding medical ethics in the field of rapidly advancing medicine of high technology.

This chapter discusses the outlines of a syllabus in Islamic medical jurisprudence, in the perspective of a wider curriculum of Islamic medicine, that we suggest should be taught in schools of medicine in Islamic countries.

Objective of the syllabus

This syllabus aims at graduating a Muslim physician who knows and practises Islamic rulings regarding health and disease and who is capable of instructing his patient, according to his knowledge in medical sciences and its Islamic rulings. It should include the following:

1. The Islamic rulings related to the acts of worship during the course of illness, e.g. purification *(Taharat)*, prayers, fasting, etc.
2. The Islamic rulings that regulate medical practice and its ethics.
3. The Islamic rulings that regulate new medical achievements.

Contents of the syllabus

A syllabus in Islamic medical jurisprudence should contain a study of the following two main items of Islamic jurisprudence, as a brief outlook, with more detail to those aspects related to the practice of medicine and its ethics. Islamic jurisprudence is divided into two parts:

I. *Usul* (fundamentals): which formulate the basic sources of Islamic laws and how they are arrived at. It is important for the practising physician to know how new rules for new problems arising in the community (here in the field of medicine) are arrived at. If he has a fair idea about *Usul,* he would appreciate these rulings arrived at by the jurists. He should be competent enough to understand and even participate in the discussions of the jurists to arrive at new rulings in newly-discovered medical techniques, that encroach upon human life and morality.

The basic rules of Islamic jurisprudence are already defined and compiled by the Islamic juristic fundamentalists *(Usuliyun)*. The first man who laid these bases clearly was Al-Imam Al-Shafie in his treatise *Al Risalah,* in the second century of Hijra (150-204AH/AD767-820).[1,2]

The main sources of Islamic law *(Shari'a)* consisted of:[3,4]

1. The *Holy Qur'an.*
2. *The Sunna: (The trodden path)* which includes the sayings of the Prophet Muhammad (PUBH); which is known sometimes as the *Sunna Qawliyya* or *Hadith,* the deeds and acts of the

Prophet *Sunna Filiyya*, and approvals *Sunna Taqririyya*, whether they are expressed or implied.

3. *The Qiyas:* or *ijitihad* whereby the jurists or *Qadi* (judge) would use analogy and reasoning to arrive at the judgement which is not mentioned in the *Holy Qur'an* or *Sunna.*
4. *Ijma:* this is the consensus of opinion of jurists. True *Ijma* of the whole community of jurists all over the world was always difficult to achieve. However, the consensus of the majority of opinions is a more realistic one. Some jurists would limit *Ijma* to the era of *Sahaba* (companions of the Prophet), others will extend it to all ages.

There are other sources like *Almasalih Al Mursalah* which is held by the Maliki school. This simply means taking care of public interest, provided it does not clash with a clear text of the *Holy Qur'an* or *Sunna.* The Hanafi school has a similar source which they call *Istihsan;* i.e. seeking the best solution for the general interest.

II. *Furu'* – i.e. branches of Islamic jurisprudence which include the details of every aspect of life and worship *(Ibadat* and *Mu'amalat).* The practising physician needs to know things related to his profession. Therefore, the syllabus should contain subjects pertaining to the day-to-day problems faced by the practising physician. Things not related to the profession should not be included or, if included, should be studied very briefly.

The rules regarding *Taharat* (cleaning) and *Najasat* (dirt) which will involve human excreta and secretions such as semen, menses, vaginal discharge, urethral discharge, etc., should be studied. The rules regarding the cleaning *(Taharat)* of those suffering from anal fistulas, vaginal fistulas, colostomies, incontinence, and those having to put dressings for their wounds or plaster of paris for their fractures, should all be studied.

The rules regarding the prayers *(Salat)* of the sick and the disabled should be studied.

Similarly, the rules regarding fasting of the sick; when they should stop fasting and when they are allowed to fast. Is it allowed to give injections (IM, IV) during fasting? Is it allowed to give blood for laboratory tests, or blood donation during fasting? Can the patient receive blood if he is fasting, etc.? Can the pregnant lady or one who is breast-feeding fast? Can enemas, eye drops, ear drops or suppositories be allowed during the period of fasting?

The rules of Hajj (pilgrimage) and their application to the patient should be studied. The use of pills to delay menses in order to perform Hajj or fasting should also be studied. The rules regarding

treatment and using prohibited substances – e.g. alcohol in medicine; drugs derived from porcine origin – e.g. porcine insulin or porcine enzymes, or porcine valves for heart-valve replacement, or porcine skin or organs for transplantation. Similarly, the rule regarding examining the opposite sex and examining sensitive parts called *awra* should be studied.

The rules that control the medical ethics and medical practice and litigancy between the patient and the doctor should be studied with sufficient detail, so as to give the student a fair knowledge of the Islamic rules that regulate his daily practise.[5]

A fair idea of the Islamic rules regarding *Halal* and *Haram* food and drink should be given to the medical student. He should also know, at least in general terms, the rules regarding the slaughter of animals.

The Islamic rules that regulate marriage should be studied in general terms. Premarital medical counselling and examination is a prerequisite in many Islamic countries to perform the contract of marriage. Genetic counselling, rules regarding the progeny, duration of pregnancy, rules regarding the rights of the foetus and embryo, and the Islamic rules regarding breast-feeding and nursing of the baby, should all be studied in fair detail. Sexual practices and their Islamic rules should be studied. Premarital, extramarital relations, sexual perversions, homosexuality and rape should all be studied from an Islamic perspective. The most important aspect of Islamic medical jurisprudence may be the rules regarding the new methods and techniques provided by the tremendous advances in medicine and moral change of societies.

The sanctity of human life rules out the demand for euthanasia, whether passive or active. However, the heroic measures, sometimes practised to prolong the process of death, are not part and parcel of the subject of euthanasia.

The Islamic rules regarding contraception, sterilization and abortion should be carefully studied.[6–8] Similarly, the Islamic rules regarding autopsy and post-mortem dissection of corpses,[9–11] and organ transplantation,[12–18] should also be studied in some detail. The Islamic rules regarding new methods of procreation, e.g. artificial insemination, *in vitro* fertilization, donation of sperms, ova (eggs) or embryos, with ensuing formation of such banks as semen banks, egg banks or embryo banks, should all be studied.[19,20] The subject of brain death received close attention from the Islamic jurists, who studied it fully in three consecutive conferences and thereafter gave their rulings.[21–22] These should be studied carefully by the medical student and

practising doctors.

Congenital malformations of the foetus, and hence whether to allow abortion or not, was the subject of many conferences held by Muslim jurists.[23] Their rulings should be studied carefully and applied universally in Muslim countries.

Genetic engineering and the rules regarding medical research and experimentation on animals or humans should be carefully studied. Problematic issues, such as growing embryos *in vitro* for the pupose of study of hereditary and congenital diseases, or for use as spare parts for organ transplantation for needy patients, should all be scrutinized in an Islamic perspective.

REFERENCES

1. Al Shafie, M.I., *Ar Risalah.* Comment Ahmed Shakir, 1309H, reprinted by Dar Al Fiker, Beirut.
2. Abu Zahrah, M., *Al Shafie.* Dar Al-Fikr Alarabi, Cairo 1948, 2nd ed: 186–190.
3. Ghanem I., *Outlines of Islamic Jurisprudence.* Saudia Publishing Jeddah, 1983, 3rd edn.
4. Ghanem, I., *Islamic Medical Jurisprudence.* London, Arthus Probsthain 1982 and *Comparative Forensic Medicine,* 1987, Beirut.
5. Ibn Al Qayim, M., *Attib An-Nabawi*, foreword by A. Khaliq; comment Dr Adil Al Azhari and Sheikh F. Al Ôqda, Beirut, Dar Al Hikma (nd) 107–116.
6. *Majal'at Majma Al Fiqh Al Islami (Islamic Jurisprudence Journal)* 1988, 5, (i): 80–748. The Proceedings of the 5th international conference of Islamic jurisprudence on birth control ; decree passed on this issue No I, 1988.
7. Albar, M.A., *Siyasat Wa Wasayel Tahdid An-Nasil Fil Madhi Wa Al Hadir (The policies and methods of birth control in the past and present)*, Beirut, Al Aser Al Hadith, 1991.
8. Albar, M.A., *Mushkilat Al Ighadh (The problem of abortion)* Jeddah. Saudia Publishing House, 2nd edn. 1986.
9. Dar Al Ifta Al Misryah. Al Fatawa Al Islamiya. Cairo. The Supreme Islamic Council, Ministry of Endowment, Fatwa of Sheikh Abdul Majid Seleem (No 639, 31 October 1982) 4: 1331.
10. Al Hifnawi, M., Medicine at Al Azhar University. Proceedings of 2nd conference of Islamic medicine, Kuwait, Islamic Organisation for Medical Sciences, 1982, 2: 811–818 (Arabic version).
11. Assalihyish, M. I., *At-Tashrih bain Allogah wa Attib; vide supra* 183–194.
12. Reference No. 9. Fatwa of Sheikh Hassan Maamoon (No 1065, 9 June 1959) 1982, 7: 2495.
13. *ibid*: Fatwa of Sheikh Hassan Maamoon (No 1087, dated 14 April 1982), 7: 2552.
14. *ibid:* Fatwa of Sheikh Hureidi (No 993, 1966) 1982, 6: 2278–2282.
15. *ibid*: Fatwa of Sheikh Gad Al Haq (No 1323, 5 December 1979), 1983,10, 3702–3715.
16. Abu Zaid, B., Attashrih Al Gothmani Wanagel Wataweed Al Insani. Majalat Majmah Al Fiqhh Al Islami. Jeddah. Organisation of Islamic Conference 1988 (1), 145–186.

17. Saudi Grand Ulema. Fatwa No.99 dated 6/11/1402H (25 August 1982), Majalat Al Majma Al Fiqhi. Islamic World League, Makkah, 1987, 1:37.
18. Majalat Majma Al Fiqh Al Islami 1988, 4, (1): 82–510. Includes papers, deliberations and decrees on organ transplantation. (proceedings of 4th international conference of Islamic jurisprudence, Jeddah, 6–11 February 1988).
19. Majalat Majma Al Fiqh Al Islami 1986, 2, (1): 233–381. Proceedings of 2nd international conference of Islamic jurisprudence, Jeddah, 22–28 December 1985 (new methods of procreation).
20. Majalat Majma Al Fiqh Al Islami 1987, 3, (1):423–516. Proceedings of 3rd international conference of Islamic jurisprudence, Amman-Jordan, 11–16 October 1986 (New methods of procreation).
21. Majalat Majma Al Fiqh Al Islami 1985, 2, (1): 426–515. Proceedings of 2nd international conference of Islamic Jurisprudence, Jeddah, 22–28 December 1985 (brain death).
22. Majalat Majma Al Fiqh Al Islami 1987, 3 (2):525–809. Proceedings of 3rd international conference of Islamic jurisprudence, Amman-Jordan, 11–16 October 1986 (brain death).
23. Islamic World League, Jurists Academy: Decree No.4, 12th Session, 1990 (10–17 February, Makkah AlMukaramah). Published in Albar MA: Al Janin Al Mushawah, Dar-Al Qalam, Dar al Manarah, Jeddah 1991:439.

CHAPTER SEVEN

A STUDY OF LEPROSY AHADITH IN THE LIGHT OF MEDICAL KNOWLEDGE

Abstract

Leprosy was once one of the most dreaded diseases of mankind. It caused deformities and mutilation due to loss of sensation and paralysis. Lepers, or persons thought to be lepers, were treated harshly – even brutally. They were often declared 'unclean' and driven away from their community to live in complete isolation. When they died, they were often burnt with all their belongings to avoid the spread of infection.

In *Leviticus (Old Testament),* Chapter 13, there is a full description of how the priest would detect 'dreaded skin lesions', and hence declare the affected person 'unclean'.[1] Certainly, many persons were victimized, and many others were misdiagnosed as lepers and thus confronted with abomination.

The priest could revoke his decision and declare the affected person 'purified'. This process would involve various rituals – killing a bird, sprinkling its blood seven times on the affected person, shaving all his hair, including eyebrows, and sending two rams, one sheep, flour and olive oil to the priest.[2]

The subject of leprosy has been addressed in more than one saying – *Hadith* – of the Prophet Muhammad (PBUH). A brief review of the medical knowledge about leprosy is first given here, followed by an explanation of these *Ahadith* in the light of this knowledge.

Leprosy was rampant in mediaeval Europe. At the beginning of the thirteenth century there were 19,000 leprosariums, with 2000 in France alone. Later, in the fourteenth century, there were forty hospi-

tals and forty leper houses in Paris. In England, from the twelfth to the fifteenth century, more than 720 hospitals were established, 217 of which were for lepers.[3]

In Islam, the lepers were treated in a humane way. Prophet Muhammad (PBUH) advised Muslims to avoid the cause of contagion and at the same time instructed them that the disease is caused only by the will of God, *Allah*.

Leprosy is a chronic granulomatous disease of man caused by *Mycobacterium leprae*, which was first described by Hansen in 1874. The causative organism, though found in armadillos and some wild monkeys in the USA and Latin America, affects man only.[4]

Leprosy is a chronic disease with a prolonged incubation period of up to thirty years – the average being 3–5 years. Its clinical manifestations are varied, depending on the immune response of the host and not on the virulence of the infecting agent. At one end of the spectrum there is tuberculoid leprosy – in which the clinical manifestations are localized to a single area of skin and its nerve supply, and where there is a paucity of micro-organisms in the affected lesions. At the other end of the spectrum, there is lepromatous leprosy – where the lesion is extensive, involving many viscera besides the skin and where the cell mediated immune response is negligible. Between the two ends are various grades and shades known as borderline cases, which may be upgraded or downgraded to one side or the other, depending on the immunity of the patient and the rôle of drugs taken to combat the disease.[4–7]

Epidemiology

Leprosy is a disease found predominently in tropical and subtropical zones; i.e. tropical Africa, Asia (mainly India), and Latin America. Nevertheless, sporadic cases are found in the former USSR region, the USA (2000 cases), China, the UK (400), and many European countries.

The World Health Organization estimated the number of leprosy cases to be 11 million,[4] but many reports raise the number to 20 million.[5–7] In endemic areas the prevalence rate reaches 25 to 55 per 1000. Lepromatous leprosy constitutes 25 to 65 per cent of cases in Asia and the Americas, while its incidence is much less in Africa, where it is 6–20 per cent.[4]

Prolonged close contact is needed for infection to occur, and even then only a minority of those infected will ever show any manifestation of the disease. In endemic areas, as much as 70–75 per cent of the population would have acquired the infection, had

overcome it, and become immune.[4-6]

Although the infectivity of leprosy (especially the lepromatous type) is high, the pathogencity is low.[4-6]

Transmission

The mode of transmission is not known for certain. It is believed that transmission occurs through nasal discharge or from ulcerated skin lesions. The intact skin contains no, or very few, organisms, especially in cases of tuberculoid leprosy. The sneeze of a patient suffering from lepromatous leprosy may contain 2×10^8 lepra bacilli. The milk of infected mothers also contains a large number of lepra bacilli. It may also be possible that *M. leprae* crosses the placental barrier and infects the foetus of an infected mother. Infection can be transmitted through the insects in laboratories, but there is little evidence that it occurs in nature.

Patients with active leprosy may harbour 10^{13} bacilli in body tissues and have a bacteraemia of 10^5/ml without signs or symptoms of septicaemia; thus, they may remain active and apparently healthy.[8]

Clinical manifestations

The first clinical manifestation is usually the indeterminate stage which appears in the skin as a small localized lesion, which may resolve spontaneously or may proceed to tuberculoid or lepromatous leprosy, depending on the immune response of the host.

In tuberculoid leprosy, there is one, or very few, skin lesions, usually circular, well-defined, and 20–50mm in diameter. The lesion is dry, hairless and hypopigmented in dark skins; red or coppery in light skins. It is anaesthetic to touch and pin prick; the patients usually complain of numbness in the affected area. Peripheral nerves are thickened, e.g. great auricular, lateral popliteal, ulnar and tibial nerves. Lepromin test is positive, and biopsy from the lesion shows non-caseating tuberculoid granuloma but no *M. leprae.*

The main characteristics of these two types of leprosy are:

Tuberculoid leprosy

1. Paucity of *M. leprae* in the skin and nasal discharge and hence low infectivity.
2. Positive lepromin test.
3. Strong cell mediated immune response leading to destruction of nerves, loss of sensation and subsequent mutilation of fingers and toes.
4. Viscera not affected.
5. The patient may recover spontaneously without any treatment.

Lepromatous Leprosy

1. Low cell mediated immunity and hence widespread infection of skin, nerves, bones, lymph nodes, and viscera; e.g. kidney and testes, iris and cornea.
2. Negative lepromin test.
3. Nasal discharge teeming with *M. leprae:* 2 x 10^8/ml.
4. *Erythema nodusum leprosum* is a serious humoral immunological reaction which damages the skin, the iris (ending in blindness), testes (ending in sterility).
5. The disease usually progresses relentlessly unless checked by treatment. Spontaneous cure is very rare.
6. It is highly infectious.

Pregnancy does not increase the complications of leprosy. The early reports suggesting an increased rate of abortion and twinning in patients with leprosy have not been substantiated in women receiving chemotherapy for leprosy.[7] However, intrauterine foetal growth retardation is commonly noted, especially in cases suffering from lepromatous leprosy who also showed subnormal oestrogen levels. The placenta of treated cases rarely showed lepra bacilli.[8]

Breast milk of untreated patients contains lepra bacilli and may infect the breast-fed baby. However, after one to two months of treatment, patients no longer excrete *M. leprae* in their milk and breast-feeding can continue. Stopping breast-feeding in tropical and subtropical zones is associated with increased infant mortality from gastro-enteritis. The best advice is to treat the mother and continue breast-feeding.[8]

The Ahadith on leprosy

The following Ahadith relate to the subject of leprosy and how to deal with it.

1. 'Abu Hurayrah, a companion of the Prophet (PBUH), stated that the Prophet said, 'There is no *Adwa* (contagion) except by the will of Allah, no *Tirah* (augury), no *Safar* (the second lunar month, which the Arabs take as ominous), and no *Hamah* (the spirit of the dead which hovers around claiming vengeance). Run away from a leper as you run away from a lion.'[9]
2. 'Amr ibn al-Sharid related that the Prophet (PBUH) sent to a leper who came with the Thaqif tribe delegation, and told him that he had accepted his allegiance.[10] Usually allegiance is confirmed by hand-shaking with the Prophet himself.
3. Jabir related that the Prophet (PBUH) ate with a leper from out of the same large bowl, and said, 'Eat. We have confidence and trust in Allah.'[11]

Ibn al-Qayyim commented on these apparently contradictory *Ahadith* in his book, *The Key to the House of Happiness'*.[12] 'Regarding the issue of leprosy, there is no doubt that the Prophet said "Escape from the leper as you escape from a lion", and sent to the leper of [the] Thaqif delegation, informing him that he had accepted his allegiance without shaking hands with him. The Prophet also ate with a leper in the same bowl.

'There is no contradiction between these *Ahadith.* Contact with a leper is only one reason for being infected, but this reason is opposed by other reasons which by necessity prevent it. The strongest of these is confidence and trust in Allah.'[12]

If we apply the medical knowledge available to study the *Ahadith,* we arrive at the following conclusions:

1. Lepromatous leprosy (with leonine facies) is highly infectious while tuberculoid leprosy is rarely infectious.
2. Only 2–5 per cent of those who get infected will ever get the disease. The majority will become immune.
3. The type of leprosy which would affect the person depends solely upon his immune response and immune system and not on the virulence of the infecting agent.
4. A leper may carry a huge number of lepra bacilli in his tissues (10^{13}) and each millilitre of blood may contain 10^5 *M. leprae* without signs or symptoms of septicaemia. The patient may be active and apparently healthy.[8]

The first *Hadith* indicates that the occurrence of the disease does not depend on the infecting agent *(Adwa).* It depends on the immunity of the host and other factors, which are all controlled by Allah. The presence of the infecting agent in the body of the host is not proof of the occurrence of the disease. The agent may be dormant or the body defence mechanisms may overcome it, or it may live in symbiosis with the host without causing any harm.

The *Jahiliya* people (pre-Islamic era), ignored the innate forces within our bodies which would negate the effect of most infectious agents. The will of Allah is capable of making our immune response to infection strong or weak, useful or deleterious.[13] The occurrence of disease is not even related to the strength of the immune system. On many occasions, the disease may be the result of an overactive immune response and not due to the infecting agent.

In the second *Hadith,* the Prophet (PBUH) did not want to shake hands with a leper who may have been suffering from lepromatous leprosy, which is highly infectious, and is instructing Muslims to avoid such sources of infection. The Prophet said 'Escape from a

leper like you escape from a lion'. The relation between mentioning the lion and lepromatous leprosy with its characteristic leonine facies is very intriguing. While the description may not have been comprehensible in olden times, it is now known to be quite apt. In the same *Hadith* the Prophet did not want to embarrass the leper by refusing the shake hands with him. The Prophet sent a messenger to tell him that he had already accepted his allegiance without the customary rite of shaking hands. This contrasts vividly with the way lepers were generally treated. Lepers were brutally treated in pre-Islamic times (*Leviticus* in the *Old Testament)* and even in post-Islamic times in mediaeval Europe.

In the third *Hadith*, the Prophet (PBUH) ate with the leper from the same bowl. That patient might have been suffering from tuberculoid leprosy, which is almost non-infectious. 'The Prophet ate with a leper in the same bowl in order to teach Muslims to have faith and trust in Allah, who controls the causes of harm and benefit. Allah alone inflicts harm and grants benefit.'[12]

Ibn al-Qayyim commented further on this *Hadith:* 'Contact with a leper is only one reason for infection, but this reason is opposed by other, probably more effective reasons which can prevent it. The strongest of these other reasons is confidence and trust in Allah.[12]

Since not every individual in the *Ummah* can afford this and have the strong faith, the Prophet advised Muslims to avoid the causes of disease and contagion as in the second *Hadith.*

Thus all three *Ahadith* tally with scientific data and indicate that contact with a patient does not in itself cause disease. Even the entrance of micro-organisms into the body does not necessarily mean disease. The immune response of the host, virulence of the infecting agent, and many other occult reasons play a rôle in the process of infection and occurrence of disease. At the same time it is wise to avoid the sources of infection when the risk is high. Thus, these *Ahadith* are now better understood in the light of modern scientific knowledge.

REFERENCES

1. *Good News Bible*: *Leviticus*, chapter 13:112–4. Today's English version. The Bible Societies, Collins/Fontana 1979.
2. *ibid.*, chapter 14:114–5.
3. *Encyclopedia Britannica* 1982; 15th edn. 8:695.
4. Bullock, W.R., Leprosy. In: *Cecil Textbook of Medicine*, Wyngaarden, J., Smith, L., eds. Phildelphia; W.B. Saunders 1985 17th edn., 1934–9.

5. Bullock, W.R., Mycobacterium Lepa. In: *Principles and practice of infectious diseases;* Mandell, Douglas, Bennett, eds. Wiley & Sons, New York 1979; 1943–53.
6. Bryceson, A., Leprosy, *Medicine International* 1981; 1:123–6.
7. Berkow, R., *Merck manual of diagnosis and therapy.* Merck, Sharp & Dohne, New Jersey 1982, 14th edn. 140–6.
8. Duncane, M.D., Leprosy in pregnancy. *Postgraduate Doctor* 1986; 9:384–92.
9. Sahih al-Bukhari: Division 71, *Kitab al-Tibb (Book of Medicine)*; chapter 18, No.609.
10. Sahih Muslim: Division 24, *Kitab al-Salam (Book of Peace)*; chapter 934, No.5541, vol.4, p.409. Khan, M.M., ed. Dar al-'Arabiyyah Publishing, Printing & Distribution, Beirut; nd. (Arabic).
11. Sunan al-Tirmidhi: *al-Jamie al-Sahih*, vol.3, p.172. Abdul Rahman M. Uthman (ed.), Beirut: Dar al-Fikr 1983 (Arabic).
12. Ibn al-Qayyim, *Miftah Dar al-Sa'adah (Key to the House of Happiness);* Riyadh, Saudi Arabia. Modern Riyadh Library, vol.2:272–4. (nd) (Arabic).
13. Al-Nawawi, M., Sahih Muslim Bishareh al-Nawawi, *Kitab al-Salam (Book of Peace)*; Bab al-Tibb wa Ijtinab al-Majdhum (chapter of medicine and avoidance of the leper) vol.14; Beirut: Dar al-Fikr, (nd) (Arabic).

CHAPTER EIGHT

CORROBORATIVE STUDY OF CONTAGION HADITHS (SAYINGS OF THE PROPHET)

Among the authentic *Hadiths* of the Prophet Muhammad (PBUH) compiled by Bukhari and Muslim in the book of medicine of their authentic works, there are certain traditions that seem to be ostensibly contradictory, which prompted the adversaries of *Traditions* past and present to reject them. Even some of the *ulema* (learned people of Islam) like Ibn Khaldun in his famous 'Introduction', argued that the *Traditions* should be divided into two categories.[1] The first one related to religious matters, and hence considered holy and pristine. The second category being related to mundane day-to-day subjects, including matters related to medicine, being part and parcel of the prophet's ordinary speech, and hence could be erroneous and fallible. The *Hadiths* on contagion were often cited as an example of this group.

However, the renowned Ulama of Hadith refuted this view, and tried to prove that all the authentic *Hadiths* of the prophet are revelations from Allah, and hence should be considered as sacred and inviolable.

Hadiths related to Contagion

The most significant of these are:

1. No contagious [infectious] disease is conveyed [without Allah's Permission] nor is there any bad omen [from birds], nor is there any Hamma [the spirit of the dead which hovers around claiming vengeance].
   A bedouin among the listeners then inquired: 'What then causes the healthy flocks of camels, which look like healthy deer on the sand, to become mangied when a mangy camel gets among them?' The Prophet (PBUH) answered: 'Who then

infected the first one?'[2-5]

2. No contagious disease is conveyed [without Allah's permission] nor is there any bad omen, nor is there any Hamma, nor is there any Safar.* Escape from a leper as you escape from a lion.[2-5]
3. No sick [camels] should be brought near the healthy ones.[2-5]
4. Amr Ibn Shareed related that the Prophet (PBUH) sent to a leper who came with the Thaqif (a tribe from Taif) delegation, and told him that he had accepted his allegiance. Allegiance is usually confirmed by shaking hands with the Prophet himself.[6]
5. Jaber related that the Prophet ate with a leper in the same large bowl and said 'Eat, we have confidence and trust in Allah.'

The *Hadiths* related to leprosy have already been studied in the previous chapter.

It seems ostensibly contradictory to say 'No contagion' and then say 'No sick should be brought near the healthy', or to say 'Escape from a leper as you escape from a lion', then eat with a leper in the same bowl. However, if a deeper look into the subject is attempted in the light of modern medical knowledge, it will soon be apparent that there is no contradiction. In fact, the *Hadiths* on contagion contain specific scientific precedence that has become known only in modern times.

But before indulging in the corroborative study, it is imperative to have some understanding of – How infectious diseases occur – What are their agents – How our bodies resist infection.

Types of Disease

Disease is an abnormal variation or function of any part of the body, which usually occurs due to casual factors, though some may not be well understood. Diseases are usually divided into two main categories: infectious and non-infectious.

The Non-Infectious Diseases

These comprise a large group of maladies which may be due to hereditary factors, nutritional factors, physical factors or to disturbance in metabolism or endocrine system, or may be due to multifactorial causes.

---

* The word Safar in Arabic refers to two meanings: i) the months of Safar, the second calendar month in the Lunar Hijra year. The Arabs of Jahiliya (pre-Islamic) considered it as an ominous month; and ii) disease caused by worms, as big as snakes, dwelling in the abdomen of the afflicted. The Jahiliya Arabs were firm believers in many superstitions. The Prophet tried his best to teach them to be logical and refute all these false beliefs and superstitions.

Sickle cell anaemia, haemophilia, albinism, Dueschene muscular dystrophy and alkaptonuria are but a few examples of the hereditary diseases which may be inherited according to Mendelian laws in recessive, dominant or sex-linked genes.

Kwashiorkor affects malnourished children and infants suffering from protein deficiency. Beri beri is a disease caused by the lack of vitamin B_1, while Pellagra is due to deficiency of Niacin in the diet. Lack of vitamin C results in scurvy. These are but a few examples of the nutritional diseases.

Metabolic diseases constitute a wide variety of maladies which could be due to known or unknown causes. Diabetes Mellitus stands as the most important and widespread metabolic disease.

Physical agents like excessive heat, radiation, cold, electricity etc., cause many distinct maladies. The insult of self-pollution with smoking can cause many diseases ranging from impaired immune system to withstand infections, to increased incidence of cardiovascular diseases like angina pectoris and coronary thrombosis. Smoking is the main cause of lung cancer.

The role of environmental pollution, an over-indulgence in alcohol drinking and careless driving in causing many serious diseases and catastrophies cannot be underestimated, and should always be considered whenever planning to promote health.

Many diseases are man-made. They could be easily avoided.

Infectious Diseases

These were the main scourges of human life. They are still very important causative agents for maladies and tragedies with the loss of millions of lives annually, especially in tropical and subtropical areas.

The causative agents may be viruses, bacteria, Protozoa, fungi or helminths, which parasitize the human body and cause damage resulting in ill-health, deformities and deaths.

Viruses are very minute (18–300 nanameter). They are not cellular, they cannot move or carry metabolic activities independently. Outside the cells of other organisms, they act like non-living material and can crystallize. However, viruses have a very ingenious method of living when they invade living tissues. They dominate the infected cells and enslave them, diverting all their activities to their benefit. The infected cell will stop functioning for itself, and will direct all its activities according to the order of the new master. The virus will multiply and proliferate inside the infected cell until it exhausts all its resources. Only then will it burst out of the cell to infect other healthy cells.

Obviously if such a phenomenon goes unchecked, viruses will kill every type of life on earth. But this cannot occur for life has to continue. The infected organisms have been bestowed with various mechanisms for defence against the invading viral predators.

Structure of a virus

A virus or virion is a very tiny particle consisting of nucleic acid core which is either RNA or DNA but never both. It is surrounded by a protein coat, called the capsid, which has different shapes. The protein coat is surrounded by an envelope which is made of lipids, carbohydrates and traces of metals.[7]

The virus when infecting a cell leaves its envelope outside the cell before entering inside. Only the core gets in, which contains the genome. It dominates the infected cell completely and multiplies within it, using its resources.

Some viruses have no envelope and hence are very small, e.g. Picorna viruses (Pico: Small RNA: Ribonucleic acid), Papova viruses (usually causing warts) and adeno viruses (infecting the upper respiratory tract).

Viruses are grouped and classified according to four main criteria: 1) size, 2) shape, 3) presence or absence of an outer envelope, 4) the type of nucleic acid they contain; i.e. RNA or DNA but never both.

All living organisms contain both DNA and RNA in each cell. The only exception being the viruses.

DNA viruses include a long list of viruses, e.g. Pox viruses causing small pox, cow pox, molluscum contagiousa. They also include the Herpes group of viruses which cause many diseases: e.g. Herpes Zoster (Shingles), oral herpes, genital herpes, Epstein Barr virus which causes glandular fever and Burkit lymphoma; and cytomegalovirus which is associated with many congenital malformations and Kaposi sarcoma.

Adeno viruses infect the respiratory tract, tonsils and conjunctiva. Papova viruses result in warts and some tumours.

RNA viruses include a very long list of viruses. The Picorna viruses are very small RNA viruses which have no envelope. They include Enteroviruses. Coxsackie viruses and Rhino viruses.

Influenza viruses belong to another group called orthomyxo viruses, while measles belong to paramyxo viruses. Rabies belong to another group called Rhabdo viruses. The viruses which are transmitted by insects causing yellow fever, encephalitis, etc., belong to another group called the Toga viruses.

AIDS (Aquired Immune Deficiency Syndrome) is caused by

another virus (HIV=Human Immune Deficiency Virus) which belongs to a unique group of viruses called Retro viruses. They have the ability of changing their core from RNA to DNA when infecting the cells, via an enzyme called reverse transcriptase.

Retro viruses are divided into two main groups: a) The onco viruses – causing tumours, especially leukaemia in birds, cats, cows and man (causing T cell Leukaemia). b) The Lenti viruses which usually affect animals – e.g. visna viruses, which attack the nervous system of sheep, and Equine infectious anaemia, which affects horses.

Different viruses attack different creatures. They are usually species-specific, and even strain-specific viruses that attack the bacteria are known as bacteriophages (bacterial eaters).[7]

Some well-known bacterial diseases of man, e.g. diphtheria, cause disease only when they get infected with viruses. The virus lyses the bacterial cell and releases its toxins. The toxins released cause the signs and symptoms of diphtheria.[8]

Though all viruses are obligatory parasitic, some of the viruses cause little harm to the host. They can live for years in a dormant state and then become reactivated.

A person may harbour the virus, shed it in his excretions, infect others, without ever being affected himself. In epidemics of poliomyelitis only 0.5–1 per cent will ever suffer from paralysis. Some 5–9 per cent of those infected might show a flu-like illness, while the rest will be asymptomatic.[9]

The Bacteria

Bacteria are much bigger than viruses, their length being measured in microns (1–10 μm). They contain both RNA and DNA and carry out metabolic activities independently. However, they differ from higher unicellular organisms in lacking membrane-bound organelles like mitochondria and Golgi complex. They also lack nuclear membrane and hence are known as prokaryotes.

Bacteria and cyanobacteria (formerly known as blue-green algae) are the oldest living matter on earth, dating back some 3.5 billion years. In comparison, the oldest eukaryotic fossils are thought to be 800 million years old.[7]

Cyanobacteria contain chlorophyll and enzymes needed for photosynthesis and hence can manufacture their food like plants. Many species can also fix atmospheric nitrogen to the soil and hence enrich it.[7]

Most bacteria live as saprophytes living on decomposed dead organic material. Many live as commensals, coexisting with other

organisms, causing no harm. Only a minority of bacteria become pathogenic and cause disease.

Many types of bacteria are useful to man. Many bacteria fix the atmospheric nitrogen, enrich the soil and provide us with food. Lactobacilli (a type of bacteria that lives in milk) convert lactose (sugar) to lactic acid, giving us yoghurt. Different flavours of cheese are obtained by adding certain types of bacteria. The production of vinegar from ethanol is the result of bacterial activity.

By genetic engineering bacteria are used to manufacture important drugs, e.g. human insulins, interferones, etc. They are also sometimes used to clear huge oil slicks that leak from tankers and pollute our seas.

In the human body many bacteria colonize the skin, digestive tract and upper respiratory tract. The number of useful bacteria in our bodies amounts to trillions of trillions. They supply us with vitamins, compete with other pathogenic bacteria and hence prevent them from replicating, and provide the vagina with acid medium that kills many pathogenic organisms.

A delicate balance is maintained between the colonizing bacteria and body defence mechanisms. Many of these bacteria become opportunistic and invade our bodies whenever our immune system becomes compromised. Some bacteria are harmless in their natural habitat, but become pathogenic when in a different site. The E. coli bacteria which inhabit the human bowel, are harmless as long as they dwell there. If they reach the urinary tract they become pathogenic. Similarly, staph aureus of the skin become pathogenic whenever they are introduced to a new location.

The following is a classification of Pathogenic bacteria to man[10]

Bacterium	Characteristics	Importance
Eubacteria		
Staphylococcus aureus	Cocci that often forms clusters; gram-positive	Can live harmoniously as part of normal microbial community. Opportunistic; can cause boils. Also exotoxin is a major cause of food poisoning
Streptococcus pyogenes	Cocci that form pairs and chains; gram-positive	Causes 'strep throat,' ear infections; scarlet fever. Induces rheumatic fever
Streptococcus pneumoniae	Cocci that forms pairs or chains; gram-positive	Causes pneumonococcal pneumonia and meningitis

Clostridium tetani	Slender, gram-positive bacilli; strictly anaerobic; forms spores	Causes tetanus (lockjaw); potent exotoxin affects nervous system
Clostridium botulinum	Large gram-positive bacilli; anaerobic; form spores	A soil organism that causes botulism; potent exotoxin affects nervous system
Neisseria gonorrhoeae	Gram-negative cocci that forms pairs (diplococci); adhere to cells via pilli	Causes gonorrhoea
Escherichia coli	Gram-negative bacilli; facultative anaerobes	Lives as part of normal intestinal microbial community; opportunistic strains among them can cause diarrhoea, urinary tract infections, and meningitis
Salmonella	Gram-negative bacilli	One species causes food poisoning (diarrhoea, vomiting, fever); another species can cause typhoid fever; a third species causes infections of the blood
Hemophilus influenza	Gram-negative small rods	Causes infections of upper respiratory tract and ear; can cause meningitis
Rickettsias		
Rickettsia ricketsii	Short rod-shaped; obligate intracellular parasite	Can cause Rocky Mountain spotted fever; transmitted by tick from dog or rodent
Spirochetes		
Treponema pallidum	Very slender, tightly coiled spirals; move via axial filament	Causes syphilis
Actinomycetes		
Mycobacterium tuberculosis	Slender, irregular rods	Causes tuberculosis of lungs and other tissues
Mycobacterium leprae	Slender, irregular rods	Causes Hansen's disease (leprosy)
Chlamydias		
Chlamydia trachomatis	Gram-negative cocci; obligate parasites	Causes trachoma (the leading cause of blindness); causes a sexually-transmitted disease (lymphogranuloma venereum)

Villee D, Dolomon E, Davis P: Biology. Saunders Co. Philadelphia –1985:397.

Transmission

These diseases are characterized by the capability of being transmitted from one person to another. The transmission may be direct via contact, food, drink or through sneezing, coughing or sexual intercourse. It may be indirect via vectors, e.g. mosquitoes transmitting malaria, yellow fever or elephantiasis; Tsetse fly transmitting sleeping sickness (trypansomiasis); flea transmitting plague, etc.

Infection

Infectious disease results from the interaction between an infectious agent (virus, bacteria, protozoan, etc.) and a susceptible host.[11]

Infection means the presence and replication of micro-organisms in the tissues of a host. The host response to infection is highly variable depending on the inter-relationship of many host and agent factors, and ranges from inapparent infection (subclinical) to disease. Disease indicates that micro-organisms are present and replicating and are damaging the host tissues, leading to signs and symptoms. Disease itself may vary from mild to severe which may threaten the life of the host.[11]

A subclinical infection indicates a reaction between the agent and the host limited to an immune response. The majority of infections are of this category.[11]

During any epidemic, say of meningitis, those who are infected with meningococcus without suffering from any signs or symptoms constitute the majority. Those who suffer from the disease are only a very small minority. Only 1 in 200 of those infected will get the disease. If the meningococcal strain is very virulent then 1 in 50 will show signs and symptoms of the disease.[12]

Similarly, when Polio was rampant (pre vaccination time) 1 in 200 of those infected would ever get poliomyelitis with ensuing paralysis of a limb. However, 5–9 per cent of those infected would show a flu-like illness, which would leave no long-term consequences. The remainder (90–95%) will never show any sign or symptom of illness.

It is found that all the highly infectious diseases cause illness in only a very small minority of those infected, ranging from 1 in 50 to 1 in 200. It is only in sexually transmitted diseases that 30 to 50 per cent of those infected will show the clinical disease. In genital herpes 50 per cent of those infected will suffer from genital herpes. Seventy per cent of those with clinical symptoms will suffer from recurrent attacks.[13]

The 'AIDs' virus HIV is mainly transmitted through sexual intercourse, especially in homosexuals. Ten per cent of those infected will

develop 'AIDs' disease within a year. Some 10–15 per cent will present with an AIDs-related complex, while another 10–15 per cent will show persistent generalized lymphadenopathy.[14]

It is not known how many will remain asymptomatic after 5–10 years.

Those asymptomatic patients, though free from disease, can pass the infection to others, and hence are called carriers.

The meningococcus (a type of bacteria causing meningitis) is usually present in the throats of many asymptomatic carriers. When the community is free from epidemic it is estimated that 3–10 per cent of the population will be carrying the virulent organism in their throats with little ill effect. Up to 10 per cent of the healthy soldiers in military barracks may be harbouring the virulent microbe, without the occurrence of a single case of meningitis.[13, 15–20]

It is only when the infection rate exceeds 20 per cent of the whole barracks population that cases of meningitis start to appear. In some instances epidemics do not occur until the infected population of these barracks reaches 90 per cent. The cause of proliferation and occurrence of epidemics is little understood.[13, 15–20]

In most outbreaks of meningococcal meningitis, those who suffer from the disease are a very small minority of those infected, i.e. 5–24 per 100,000. In very virulent strains the incidence may reach 370 persons per 100,000 (Sao Paulo epidemic of 1974).[13, 15–20]

The epidemics of meningitis were mainly due to strain 'A' meningococcus. However, between 1975–80, type A constituted only three per cent of all epidemics. From 1980 onwards, type W 135 emerged as an important causative strain. [13, 15–20]

The majority of the population show antibodies against meningococcus, indicating previous subclinical infection. Fifty per cent of the new-born will show antibodies against meningococci which they acquire through the placentae of their mothers. This passive immunity is lost and then active immunity is gained. Seventy per cent of adolescents are already immune.[13, 15–20]

The apparently healthy carriers are the most important source of infection. In epidemics of meningitis, it was found that the main source of infection was the healthy carriers rather than patients suffering from meningitis.

The incubation period, in which the micro-organism multiplies inside the host without apparent signs or symptoms, is usually the most infectious period. The incubation period varies greatly according to the type of micro-organism and the defence of the host. It may be short (1–2 days) in influenza, common cold etc., or prolonged as in leprosy (up to 30 years).

It is clear, therefore, that the occurrence of infection is not equivalent to the occurrence of disease. The occurrence of disease depends on many variables; e.g. the virulence of the micro-organism, the infecting dose, the state of the immunity of the host, the role of drugs, stress, pregnancy, etc.

When an infecting agent enters the body the following might occur:

1. If the infecting dose is small, the body defence mechanism usually eradicates it, except in cases where there is a defect in the immune system.
2. If the infecting dose is large and the agent is virulent, the microbe will multiply inside the body for a certain period before clinical signs and symptoms of the disease appear. This is known as the incubation period, which is most infectious to others.
3. If the immune response is competent, it will soon overcome the disease and the infecting agent will disappear from the body. It will end in an enhanced immune response against attacks of this agent.
4. However, if the organism is virulent and the immune response is inadequate, the disease spreads, and it may kill the host if unchecked by appropriate treatment.
5. In certain cases, the patient might be cured, but the micro-organisms remain in the body – e.g. typhoid carriers who remain infectious to others, though they are themselves cured of the disease. In many carriers, no disease occurs, but the micro-organisms multiply in the body and are shed in body secretions, thus infecting others.
6. The immune response triggered by the infecting agent, may result in an immune complex deposited in body tissues, resulting in serious disease. Most cases of glomerulonephritis (kidney disease) are of this type.

The occurrence of disease, therefore, is a very complex matter depending on so many variables that make it difficult to predict the sequelae of infection in every case. The factors involving the infecting agent are already alluded to – e.g. infecting dose, virulence.

There are factors relating to the host. First there are the general non-specific defence mechanisms, which include the normal flora (bacteria) of the skin, oral cavity, vagina and bowels. It also includes the state of nutrition, the role of hormones, stress, and age. Then there is the specific immune system comprised of cells, antibodies, complement, etc. Even when everything is fine, it is difficult to predict

whether the immune response will be beneficial and eradicate the infection, or be deleterious and cause disease worse than the infecting organism.

Corroborative study of the *Hadiths* of the Contagion

From the foregoing discussion of infectious diseases, it could be seen clearly that the *Hadiths* of the prophet on this subject are not contradictible, but in fact miraculous. The entry of the microbe into the body of the host is not enough by itself to cause disease. It might not multiply inside the body and hence does not even cause infection. Even if it does replicate inside the body and cause infection, this does not equate it with disease. Infection might be established, but no disease occurs. In fact 99 per cent of all serious infectious diseases act in this way. When an epidemic of meningitis, poliomyelitis or even cholera occurs, those who carry the infecting agent without showing any signs or symptoms of the disease, constitute the majority. Only a small minority will ever show the signs and symptoms of the disease.

When the Prophet said no *adwa* (contagious or infectious disease) is conveyed [without Allah's permission], it is clear that he was referring to the multitude of factors that would control the occurrence of an infectious disease. In fact many of these factors were not even known to man except in the last two to three decades. Still there are mysteries in this field. What we know is very little compared to what we don't know.

Most of the time we can do very little to change our immune system for the better. The only exception is the role of vaccination. Otherwise, we usually jeopardize our innate immune system by smoking, indulgence of alcohol, pollution, promiscuity and even by medical intervention, e.g. instrumentation, exposure to x-rays, taking antibiotics or drugs that suppress the immune system such as Imuran (azathioprine), cyclosporine and prednisolone.

These man-made interventions favour the occurrence of opportunistic infections, whereby the commensals which live in peace in our mouths, throats, skin and bowels change their attitude and become very aggressive, and invade our bodies.

In Acquired Immune Deficiency Syndrome (AIDs), the immune system is jeopardized by the AIDs virus HIV, which attacks certain types of the immune system cells called T_4 (T helper) lymphocytes. Opportunistic infections are very common in this syndrome and usually kill the patient within one to two years.

It is clear therefore that the sayings of the prophet tallies with the scientific facts. These *Hadiths* inspire the believers to turn back to

Allah for He alone can make a certain microbe a source of illness and malady, and he alone can award its ill-effects and make it harmless. He alone can make the meningococcus that dwells in our throats as benign as a tender yearling or make it as deadly as a poisonous serpent. He alone can turn the virus of poliomyelitis into a deadly disease which paralyses the muscles of respiration or turn it into a protective element for the child against future attacks of polio viruses.

It was known for ages that when a child was infected with smallpox and got over it, he became immune to further attacks. The Turks introduced the vaccination of cow pox, a much milder disease, to protect against smallpox. It soon reached England and was tried successfully by Jenner – who was credited with introducing smallpox vaccination. Smallpox vaccination has eradicated smallpox from the whole world. The role of vaccination against polio, diphtheria, tetanus, measles, etc., cannot be underestimated. It has saved the lives and the health of millions.

Millions have benefited from vaccination, but there are some who developed a serious disease – e.g. encephalitis – as a result of vaccination.

In fact, the expected deleterious effect of smallpox vaccination (after eradicating smallpox worldwide) is more than its expected benefit – which prompted all countries of the world to stop small pox vaccinations.

Even drugs which are used in the cure of serious diseases may, in certain cases, cause more harm than good. They can kill through allergic reactions, or cause serious incurable disease. Iatrogenic diseases – i.e. diseases caused by the intervention of physicians, surgeons, radiologists, etc., – is a proliferating problem.

We should not, therefore, be over-confident and think that by *our* power alone we can conquer disease. The truth is that malady and remedy are in the hands of God. We should do our best and use whatever knowledge we have to combat disease and remain healthy, but at the same time acknowledge the unaccountable gifts of God. We should have faith in Him as He alone is the Lord of all the worlds, the seen and the unseen.

The Messenger of God (PBUH) said 'Treat diseases O' servants of Allah, for he who sendeth disease sends remedy.'

He directed all Muslims to keep healthy, avoid causes of harm and illness, as much as possible. He however told them that, disease and health are in the hands of Allah, Who alone we should worship and trust. Microbes, are not in themselves, but a part of the cause of disease and infection, and not the whole cause.

Ibn Al-Qayim (691–751H/AD1292–1349) commented on this point and said 'The apparent causes of infectious disease function as a part of a cause and not the whole cause. Their effect is just like the effect of the parents having sex, in bringing forth a child. Copulation in this instance is but one part of several parts of the causes by which Allah creates the foetus . . . Similarly cultivating the land and sowing the seeds is but a small part out of the numerous causes by which Allah shapes the plant.'

Ibn Al-Qayim concluded by claiming that those who reject the apparent causes completely and only have faith in Allah, without using whatever knowledge they were given to avoid harmful causes, are aberrant and to be blamed. Similarly, those who only look to the apparent cause and forget to have faith in Allah are mistaken. The right thing is to have full faith in Allah and at the same time do not forget the apparent causes. It is important to link one with the other for they should not be separated.

We should not deny the effect of causes. They should be accepted in the world of causes. Nevertheless we should have full conviction that they can neither do harm nor grant advantage by themselves. Everything is in the reign of the Creator of causes Who alone has control over harm and advantage. On Him alone shall a believer rely and trust. 'But if they turn away, say: God sufficeth me. There is no God but He, on Him is my trust. He the Lord of the Throne [of glory] Supreme.'

REFERENCES

1. Ibn Khaldun, *Al-Muqaddima, Dar Al-Katib Al-Arabi.* Beirut, 5th edn. 115–116 (nd).
2. Al-Bukhari, M.I., *Al-Jamie* Assahih *(Book of Medicine),* vol.9; Matbaat Al-Sjaab, (nd).
3. Ibn Hajar Al-Asqalani, Fatéh Al Bari Bishareh *Sahihi Al-Bukhari, (Book of Medicine),* Al Maktabah Assalafiyah, Cairo.
4. Al-Nawawi, M.S., *Shareh Sahih Muslim*, chapter of medicine, Dar Al-Fikr, Beirut; vol.14:169–228.
5. Ibn Al Atheer Al-Zari, M.B., *Jamee al-Osool min ahadith. Arrasool;* Matbaat Assona Al-Mohamadiyah, Cairo 1952.
6. Al-Tirmidhi, *Al-Jamie al-Sahih,* Dar Al-Fikr, Beirut 1983 2nd edn. vol.39, chapter of food: 172.
7. Villee, D., Solomon, E., Davis, P., *Biology.* Saunders Co. Philadelphia/ London/New York 1985; 370–400.
8. Johnson, R.T., Acute anterior poliomyelitis. In: *Cecil textbook of medicine*; Wyngaarden, J., Smith, L., (eds.), Saunders Co. Philadelphia/London 1985; 17th edn. 2130–2135.

9. Kilbourn, E.D., Introduction to viral diseases. In: *Cecil textbook of medicine*, vide *supra*; 1687–9.
10. Brachman, P., Transmission and principles of control. In: *Infectious diseases*, Mandell, G., Douglas, R., Bennet, J. (eds.), John Wiley Sons, New York 1979; 120–125.
11. Brachman, P., Epidemiology of infectious diseases. *ibid.*, 109–120.
12. Swartz, M.N., Meningococcal disease. In: *Cecil textbook of medicine*, Saunders Co. Philadelphia, London 1985; 1557–1563.
13. Albar, M., Sexually transmitted diseases (Arabic); Dar Al Manara, Jeddah 1987 3rd edn. 242–252.
14. Wong-Stad, F., Gallo, R., Human T lymphotropic retro virus. *Nature* 1985; 317:395–403.
15. Band, J.D., Chamberland, M.E., *et al.*, Trends in meningococcal diseases in the United States 1975–1980, *J. Infect. Dis.* 1983; 148:754.
16. De Voe, I.W., The meningococcus and mechanism of pathonogenesity. *Microbiol Rev.* 1982; 46:162.
17. Greenfield, S., Sheehe, R.R., Feldman, H.A., Meningococcal carriage in a population of normal families. *J. Infect. Dis.* 1971; 123:167.
18. Feldman, H.A., Meningococcal infections. *Adv. Int. Med.* 1972; 18:117.
19. Peltolah, Meningococcal disease still with us. *Rev. Infect. Dis.* 1983; 5:71.
20. Mohammed, I., Meningococcal vaccine. *Postgraduate Doctor*, 1987; 10, 4:225–230.
21. Ibn Al-Qayim, M.A., Miftah Dar Assadah, Maktabat Al-Riyadh Al-Haditha, Riyadh (nd), vol.2:264–270.

CHAPTER NINE

INFECTIOUS DISEASES TRANSMITTED FROM PIGS TO MAN VIRAL AND BACTERIAL DISEASES*

Introduction

Some Muslim scholars have tried to explain part of the divine wisdom for forbidding the flesh of swine, by directing attention to some infectious diseases transmitted by pigs to man. However, their writings were only limited to two or three parasitic infestations – e.g. *Taenia solium* and *Trichenella spiralis*. In fact, the number of infectious diseases transmitted from pigs to man is quite extensive. Here, only the viral and bacterial diseases will be briefly reviewed.

Some of the viral diseases are serious and threaten man's health – e.g. Japanese encephalitis; while some are less serious – e.g. vesicular stomatitis. Likewise, some of the bacterial diseases are serious – e.g. Brucellosis; while some are less serious – e.g. Erysipeloid.

The pig plays a major role in transmitting some of these diseases, while it shares with other animals a rôle in transmitting the other diseases to man.

As a means for controlling and preventing the transmission of these diseases to man, careful measures have to be taken in handling sick animals or their products, especially pigs. A better measure is to abandon eating pig meat, since Allah Almighty described it as an abomination in the *Holy Qur'an*.

«قل لا اجد في ما اوحي اليّ محرما على طاعم يطعمه إلا ان
يكون ميتة أو دما مسفوحا او لحم خنزير فانه رجس»
سورة الأنعام ـ آية ١٤٥

* Co-author: Dr Khalid Amin Mohammed Ph.D Vet. Virology, Assistant Professor of Microbiology, College of Medicine and Allied Sciences, King Abdul Aziz University, Jeddah.

'Say: I find not in the message received by me by inspiration any [meat] forbidden to be eaten by one who wishes to eat it unless it be dead, meat or blood poured forth, or the flesh of swine, for it is an abomination.'

Sura An'am Aya 145.

He clarified for us the types of food which are forbidden and described them as an abomination or filth. He directed people to eat of the good things in the *Holy Qur'an:*

«يا ايها الناس كلوا مما في الأرض حلالا طيبا»

سورة البقرة ـ آية ١٦٨

'O ye people! eat of what is on earth, lawful and good.'

Sura Baqara Aya 168

«يا ايها الذين آمنوا كلوا من طيبات ما رزقناكم واشكروا لله إن كنتم إياه تعبدون. انما حرم عليكم الميتة والدم ولحم الخنزير»

سورة البقرة ـ آية ١٧٢، ١٧٣

'O ye who believe! eat of the good things. He hath only forbidden you dead meat, and blood, and the flesh of the swine.'

Sura Baqara Aya 172,173

«حرمت عليكم الميتة والدم ولحم الخنزير»

سورة المائدة ـ آية ٣

'Forbidden to you [for food] are: dead meat, blood, the flesh of swine.'

Sura Mayida, Aya 3

Viral diseases

The number of viral diseases transmitted from pigs to man is rather limited. Some are serious – e.g. Japanese encephalitis; while others are less serious – e.g. vesicular stomatitis. The pig plays a major rôle in transmitting some of them where the virus replicates in the pig cells and is then directly transmitted to man. In others, the first infection is transmitted from the pig to man, then propagated from man to man.

An example of such infection is the influenza pandemic of 1918, which resulted in the death of more than twenty million people. Such pandemics occurred repeatedly from that year up until 1976, but to a less serious extent.

Arthropods play a rôle in transmitting some of these diseases – e.g. Japanese encephalitis – which is transmitted to man by mosquitoes. Only the most important diseases which are transmitted from pigs to man will be discussed here.

1. Influenza Type (A)

This disease is caused by a member of the family *Orthomyxoviridae.* It affects man, pigs, horses and birds. There are three major types of the virus, and within the types there are many serotypes, which differ in their nucleic acid. This is consequently reflected in the viral proteins; namely, the haemaglutinin and the enzyme neuraminidase located in the viral envelope. Infection due to one of these serotypes does not give protection from the other serotypes. The segmented ribonucleic acid of the virus is responsible for production of new serotypes due to a major change in the base sequence of the nucleic acid called 'antigenic shift' or due to a minor change called 'antigenic drift'. Due to these changes new serotypes emerge every 10–15 years. In 1918, one serotype of swine origin was responsible for a pandemic which killed more than twenty million people. In 1976, another pandemic due to an influenza virus of swine origin occurred, but it did not spread as widely as expected.

Human types of influenza virus can replicate in pig cells, and likewise swine types can replicate in human cells.

2. Japanese encephalitis

This disease is common in east Asia. The aetiology of the disease is a member of the family *Togaviridae,* which contains yellow fever virus. The virus replicates naturally in wild birds and is transmitted from them to pigs and man by the *Culex* mosquito.

The virus replicates in pigs without causing disease in them except death of the foetus and abortion. In man, the virus can cause epidemics, especially in rural areas where pigs are reared.

The disease in man occurs without showing clear symptoms, or it may cause a severe encephalitis resulting in death. In 1961, an epidemic in Taiwan resulted in the death of 28 per cent of total cases.

3. Vesicular stomatitis

This disease is caused by a member of the family *Rhabdoviridae.* It affects cattle, horses and pigs. It is transmitted from them to man, supposedly by mosquitoes and sand flies. In man, the disease is manifested by fever and vesicles appearing in the mouth area.

4. Foot and mouth disease

The aetology of this disease is a member of the family *Picornaviradae*. It affects cattle and pigs and is widely distributed all over the world. It is transmitted from animals to man by contact with sick animals and their products. In man it causes fever and vesicles in the area of the mouth, hands and feet.

5. Swine vesicular disease

This disease is also caused by a member of the family *Picornaviradae*, and resembles Foot and Mouth disease to a great extent. The infection is transmitted from pigs to man by contact with sick animals and their products. The disease in man causes fever and severe pain in joints and muscles.

6. Encephalomyocarditis

The aetiology of this disease is a member of *Picornaviradae*. It affects pigs and causes epidemics and severe disease. It also affects mice and rats, in which it causes chronic disease. The disease is transmitted to man by contact with sick animals and their products, causing encephalitis and – in rare cases – myocarditis.

7. Ross River fever

Its aetiology is a member of the family *Togaviridae*. The virus replicates in pigs and other animals without showing marked symptoms. It is transmitted from them to man by mosquitoes of the *Genera Culex* and *Aedes*. In man, the disease causes fever, skin erruption and severe arthritis and occurs epidemically.

8. Gastroenteritis in children

This disease is caused by a *rotavirus*, a member of the family *Reoviridae*. Different types of the virus cause disease in many newborn animals, including pigs, in which it produces diarrhoea. In man, the virus causes gastroenteritis in young children.

The human *rotavirus* was found to grow in pig intestines, causing disease. This indicates that swine *rotavirus* may cause disease in man.

Bacterial Diseases

Pigs play a rôle in transmitting some bacterial diseases to man, some of which are serious. The most important diseases are:

1. Brucellosis

This disease mainly affects cattle, goats and pigs; it is caused by three bacterial species: *Brucella abortus, Brucella melitensi,* and *Brucella suis.* The disease affects pregnant animals and causes death to the foetus and abortion. Transmission of the disease to man may occur from contact with sick animals and their produtcts. The swine bacteria *Brucella suis* is considered the most serious of the three species to man – because it is difficult to diagnose the disease in pigs and in man, and because there is no effective vaccine for it. Also, it causes a serious illness in man – manifested by meningoencephalitis, endocarditis, splenomegaly, cholecystitis, arthritis, nephritis, orchitis and uveitis.

2. Salmonellosis

The *Salmonella* species cause many diseases in man and animals. The most important of these are typhoid, paratyphoid and food poisoning.

Food poisoning is the most common disease in which animals play a vital rôle in transmitting it to man. Pigs and their products, in addition to restaurant personnel, constitute an important source for the *Salmonella* which produce the disease in man. Some medical preparations – e.g. digestive enzymes of swine origin – may act as a source of infection.

3. Leptospirosis

Most of the *Leptospira* species affect rodents, pigs and dogs. Man is usually affected by contact with sick animals and their urine. The symptoms of the disease in man are fever and jaundice due to hepatitis. Other organs affected are kidneys, heart and blood vessels, causing haemorrhage and hypotension, and in rare cases the disease is fatal – as in *Weil's Disease.*

The pig plays an important rôle in transmitting the disease to man through its flesh and other products, or by contaminating water sources by its urine – which might lead to an epidemic.

4. Listeriosis

This is considered as an important bacterial zoonotic disease. It is caused by *Listeria monocytogenes,* and pigs play an important role in its transmission to man. The most commonly affected are those in close contact with pigs. The disease in man may cause death of the foetus and abortion, or post-natal death.

5. Streptococcal infections

The streptococcus species are widely distributed in man and animals. Pigs play an important rôle in transmitting them to man. In 1968, streptococcal meningoencephalitis caused a large number of fatalities in man in Holland and Denmark. A similar outbreak of the disease also occurred in the Bengal Province in India in 1984, when it killed several thousand people. The source of the infection in the two epidemics was *Streptococcus spp.* of swine origin. Some scientific references recorded that streptococcal meningoencephalitis repeatedly affected pigs.

In Britain, for example, 17 epidemics occurred in 1974. There were 52 epidemics in 1975, but by 1976 this figure had escalated to 152 epidemics.

6. Clostridial infections

The causal group of bacteria in this case are *anaerobes,* which are responsible for a number of diseases in man and animals. The most important species transmitted from animal to man are *Clostridium botulinum* and *Clostridium perferingens,* which are responsible for causing food poisoning in man and animals.

It has been found that 30 to 80 per cent of all carcasses of slaughtered pigs carry *Clostridium perferingens.* These bacteria are known to be thermostable and were found to survive after cooking.

7. Anthrax (Malignant pustule)

The aetiology of this disease is *Bacillus anthracis.* It affects cattle, sheep, goats and pigs, causing septicaemia and sudden death. The infection may be transmitted from animals to man by contact with dead animals or their products – such as meat, skin, wool, etc. There are three forms of the disease in man:

a) Malignant pustule of the skin – the commonest infection
b) Malignant pustule of the lungs
c) Malignant pustule of the intestines

8. Infections caused by Fusiformis necrophorum

This bacterium causes a number of infections in pigs, cattle, and goats. It is transmitted from animals to man, where it enters through the skin and causes an abscess which is accompanied by inflammation of the local lymph nodes. In rare cases the bacteria may enter the blood and reach the lungs or other internal organs.

9. Erysepeloid

This is a professional disease, affecting mainly those who work in close contact with pigs and fish. The bacterium *Erysepelothrix spp.* causes disease in pigs and is also found on the gills of fish. The disease in man causes a reddish skin eruption which usually occurs on the hands. The infection is painful and continues for 2–3 weeks, and then disappears. Rarely, the bacteria may reach the neighbouring lymph nodes and enter the blood circulation.

In pigs, the disease is most severe and may cause skin necrosis, enters the blood, and affects the heart and other internal organs.

10. Infections caused by Yersinia enterocolitis and Yersinia *pseudotuberculosis*

Yersinia enterocolitis is widely distributed in animals – mainly pigs, dogs and cattle. Pigs play a major rôle in transmitting it to man, followed by dogs and, rarely, other animals.

Some epidemics have been recorded in man due to eating contaminated foods, especially chocolates. In children, the disease is characterized by fever, and diarrhoea which is mixed with blood and pus. In adults, the disease is less severe but in thirty per cent of cases it is accompanied by arthritis.

Yersinia pseudotuberculosis resembles *Yersinia enterocolitis.* However, they can be differentiated from each other by some special laboratory tests. It causes a pseudotuberculosis, manifested by inflammation of the mesenteric lymph nodes. Sometimes the infection resembles acute appendicitis but, when laparotomy is performed, the surgeon discovers inflammation of the neighbouring lymph nodes, while the appendix is not affected. The infection due to *Yersinia pseudotuberculosis* may cause arthritis and septicaemia.

Pig meat is considered the major source of infection to man and the personnel who work in contact with pigs are mainly affected.

11. Tuberculosis

Mycobacterium tuberculois (Humanis), the human type, is mainly responsible for producing the disease in man; followed by the bovine type *Mycobacterium bovis,* and then the avian type *Mycobacterium avium.*

Pigs have been found to suffer from all three types. The disease is transmitted from sick animals to man by close contact, and affected meat also constitutes a source of infection.

12. Swine dysentery

This disease is widely distributed among pigs. In Britain, for example, more than 25 per cent of all pigs suffer from the disease; especially those reared for fattening, where the morbidity reaches 100 per cent.

The disease is caused by a group of bacteria – mainly some types of *Spirochetes, Fusiformis* and *Escherichia coli.* It is characterized by fever and severe diarrhoea which is mixed with blood and pus. The disease is transmitted to man by close contact with sick animals or by eating contaminated foods and water.

13. Melioidosis

This disease mainly affects pigs, cats, mice, sheep and cattle, and is transmitted from sick animals to man. The disease is found in the Philippines, Sri Lanka, Indonesia, New Guinea and Central Africa.

The infection occurs on the skin and causes a localized inflamation with enlargement of the neighbouring lymph nodes and fever. The infection might spread through the blood to affect the lungs, the brain and other internal organs, causing death if treatment is delayed. The disease may be in the form of acute pneumonia, or it may be a chronic condition resembling tuberculosis.

14. Pasteurollosis

This disease mainly affects pigs, dogs, cats, mice, birds and cattle. The infection may be transmitted from sick animals to man through close contact. It manifests by pneumonia, septicaemia, athritis and nephritis.

15. Mycoplasmosis

The disease in pigs caused by *Mycoplasma suis*, which produces a pneumonia in them. The infection might be transmitted to man, especially those who work in close contact with sick animals, causing acute pneumonia.

In summary: avoiding contact with pigs and avoiding eating pork or its products reduces the risks of many bacterial and viral infections and diseases, and it will be an asset to the health of many communities.

CHAPTER TEN

NON-INFECTIOUS DISEASES ASSOCIATED WITH PORK DIET CONSUMPTION*

Fat and cancer

During the past five decades, the influence of dietary fat on the development of certain forms of cancer has led to the conclusion that there is a good positive correlation between the dietary pork fat consumption and cancer rates of the colon, breast, prostate, endometrium, pancreas, and of the biliary system.

These correlations have arisen from three kinds of evidence. First, descriptive epidemiologic studies which focus on the effect of fat, especially lard, on cancer incidence and mortality rates among different countries and among population groups who have different fat intake and different dietary habits, such as the Seventh-Day Adventists. Second, evidence came from experimental studies. These experimental studies have been assisted by the discovery of several animal models in which a lesion mimicking human lesions can be induced chemically. In these models, animals which have been fed a high lard diet developed more colon and breast tumours than animals fed low fat diets.

Third, strong evidence relating the aetiology of the above-mentioned cancer to lard came from migrant studies. Within two to three generations, Japanese migrants to the USA experience an increase in cancer incidence rates. Breast cancer in Japanese-American women had risen to five times that of age-matched native Japanese women during the years 1969–1971. The same is true for the Polish immigrants to the United States. These migrant studies exclude the possibility of genetic variations.

* 1st author: Dr. Sufian M El-Assouli Ph.D. Head of Dept of Biology, Faculty of Medicine, King AbdulAziz University, Jeddah, Saudi Arabia

Current evidence indicates that the possible mechanisms by which dietary pork fat could play a promoting effect in human carcinogenesis could be through: 1) its effect on the production, activation, or inactivation of carcinogens by the intestinal flora; 2) its effect on the endogenous production, activation, or inactivation of carcinogens; or 3) its effect on tissues to alter their susceptibility to carcinogenesis.

Correlation studies between different sources of fat and breast cancer concluded that the highest positive correlation was found for pork fat, followed by other animal fat intake, and that a similar association could not be found for vegetable fat.

Dietary fat and colon cancer

Cancer of the colon has been the subject of several epidemiologic, migrant, and experimental studies.[1,2,3,4,5] The highest incidence rates are found in North America, New Zealand, and Western Europe (Fig.1). The lowest incidences are found in Africa, Asia, and Latin America.

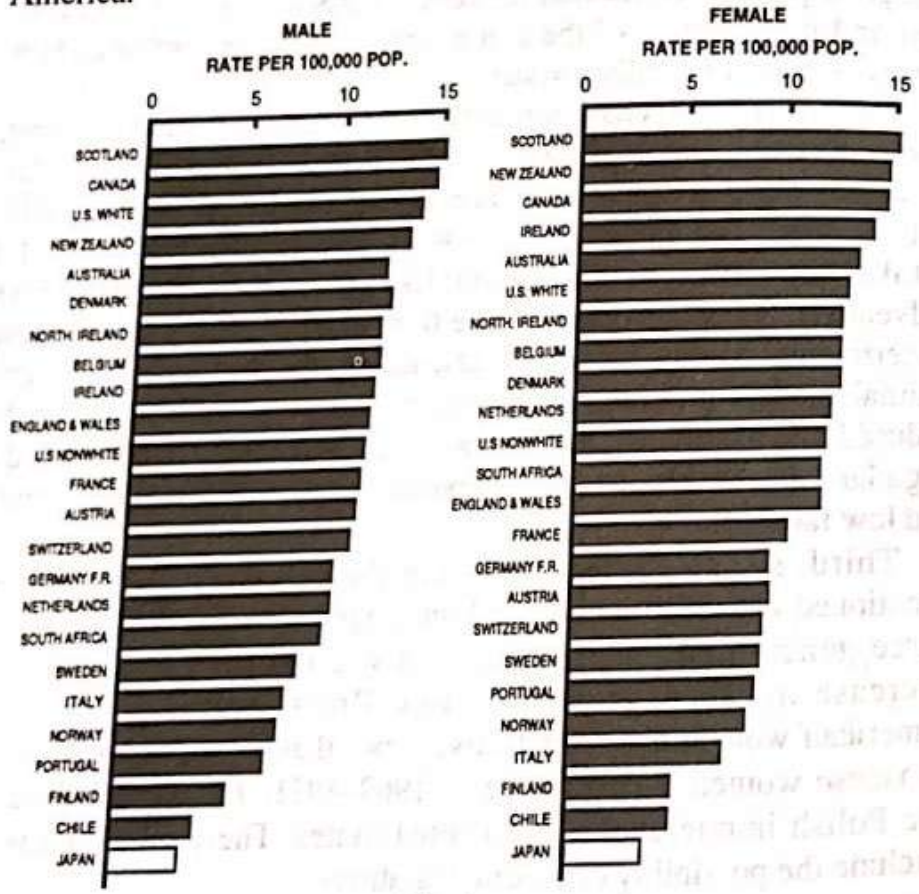


Fig.1

Age-adjusted death rates for malignant neoplasma of intestine, except rectum, in different countries, 1966-1967. (from Segi and Kurihara, 1972)

Epidemiological studies have shown food preferences, especially fat, to be associated with high and low-risk populations. Such correlations between fat intake and colon cancer mortality is supported by experimental evidence from animal models.[6,7] A worldwide correlation between colon cancer incidence and total fat consumptions has been established (Fig.2).

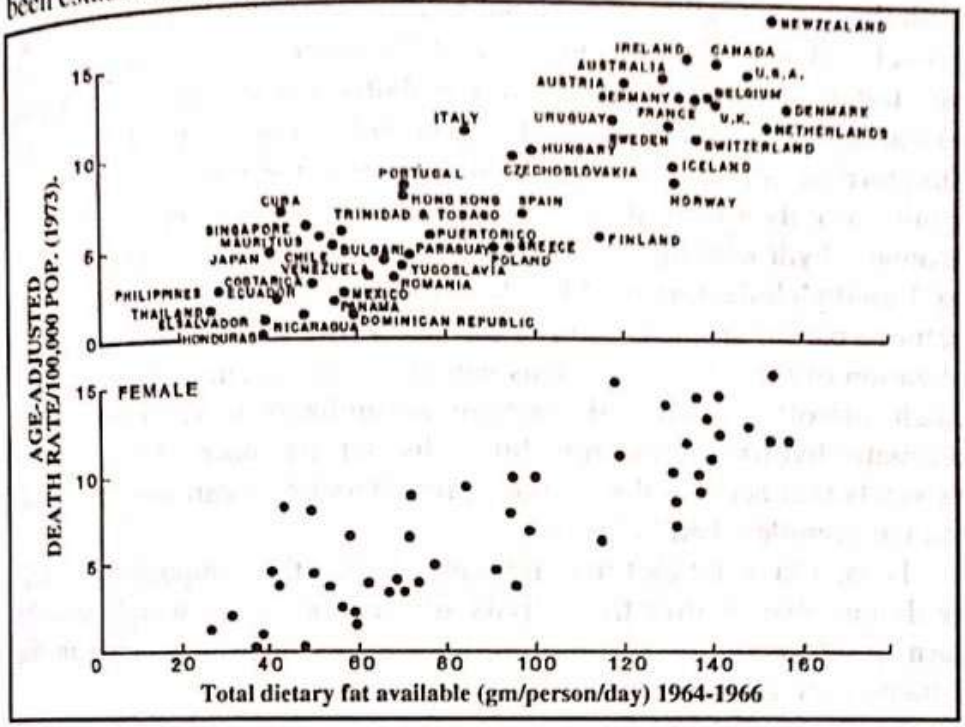


Fig.2

correlation between age-adjusted mortality from colon cancer and per capita consumption of fat. (from Carroll and Khor, 1975)

Migrant studies have shown that Japanese migrants to the USA experience an increase in colon cancer incidence rates from those rates common in Japan. This observation suggests that environmental factors, rather than genetic characteristics, account for a substantial part in the aetiology of colon cancer.

Comparative studies to search for factors that link the foods of individual groups within a small geographical area to their colon cancer risks indicated that the Seventh-Day Adventists who do not consume pork and adhere to a vegetarian diet have a 30–40 per cent less colon cancer death rate of a comparable general population sample.[8,9]

Similarly, the incidence of colon cancer in Mormons, who eat more whole-grain breads, fruit and vegetables and do not eat pork, also have lower colon cancer than other US white population.[10,11]

Wynder, *et al*[12] and others,[13] proposed that colon cancer incidence is mainly associated with total dietary fat. Gregor, *et al*[14] proposed that fat acts as a promoter rather than an initiator during cancer development.

The mechanisms by which dietary fat causes colon cancer has been hypothesized as follows: 1) the amount of dietary fat determines both the concentration of acid and neutral sterol substrates in the large bowel and also the composition of the microflora acting on such substrates. 2) The gut microflora metabolizes acid and neutral sterols to carcinogens active in the large bowel.[15] The bacteria alters the structure of colonic steroid[16,17] and they become potentially carcinogenic since their overall structure is similar to carcinogenic polycyclic aromatic hydrocarbons (PAH) and they may be converted chemically to 3-methylcholanthrene. Also, human gut floras have been shown to achieve partial aromatization of the sterol ring system, and full aromatization of the bile and nucleus would yield a carcinogen metabolite. Such microflora-mediated reactions are unlikely to yield polycyclic aromatic hydrocarbons from bile-salts but are more likely to yield products that act as colon tumour-promoters or co-carcinogens rather than as complete carcinogens.[18]

Thus, a high-fat diet may not only change the composition of bile acids but also modify the activity of gut microflora which may, in turn, produce tumour-promoting substances from bile acids in the lumen of the colon.[19,20]

Additional support for the role of dietary lard in the induction of colon cancer in man came from experimental studies in which intestinal tumours were induced chemically. Animals fed on a high-lard (20 per cent) diet developed more intestinal tumours and more metastases than rats fed low-lard diets (5 per cent). (Table I).[21]

TABLE I.
COLON TUMOUR INCIDENCE IN RATS FED DIETS HIGH IN FAT AND TREATED WITH CARCINOGENS

Diet fat	Percentage in diet	Protein	Percentage in diet	Carcinogen	Percentage of rats with colon tumours
Lard	5	Casein	25	DMH	17
Lard	20		25	DMH	67

Dietary Fat and cancer of the breast

Epidemiological studies have generated hypothesis for the aetiology of breast cancer through international comparison of incidence, case-

control studies, migration studies and experimental studies. Such studies have provided the basis for the influence of nutrition and fat, in particular on breast cancer incidence.

High breast cancer incidences are found in the USA and Western Europe and low rates in Asia, particularly Japan. (Fig.3).

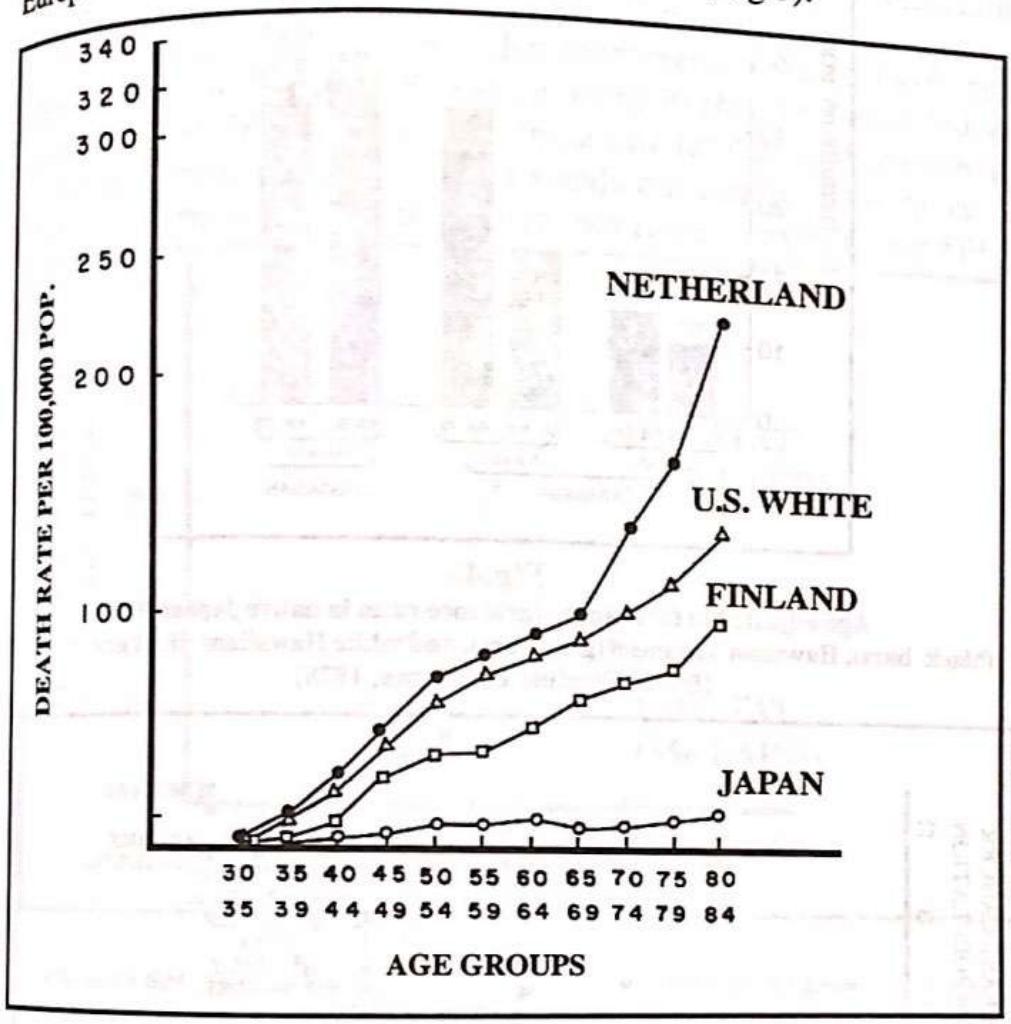


Fig.3
Female breast cancer death rates by age in four countries, 1966-1967

The strongest evidence for environmental factors in the aetiology of breast cancer is found in the results of migrant studies. Within two to three generations, Japanese migrants to the USA experienced an increase in cancer incidence rates from those common in Japan (Fig.4). During 1969–1971 the incidence of breast cancer in Japanese-American women had risen to five times that of age-matched native Japanese women.[22] Alterations in dietary practice, especially the increase in pork fat intake, appear to be the factor that best accounts for the increase in breast cancer incidence.

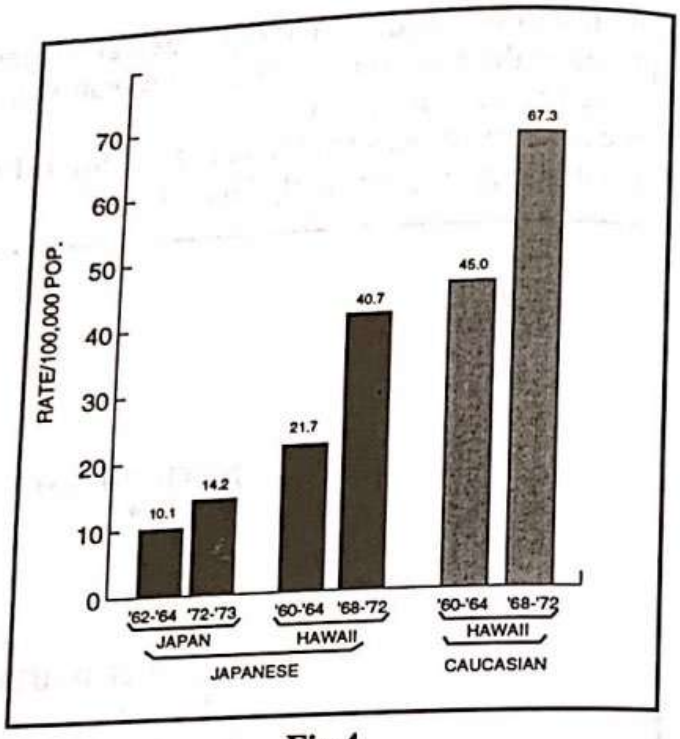


Fig.4

Age-adjusted breast cancer incidence rates in native Japanese (black bars), Hawaiian Japanese (gray bars), and white Hawaiians (light gray bars) (from Wynder; Hirayama, 1978)

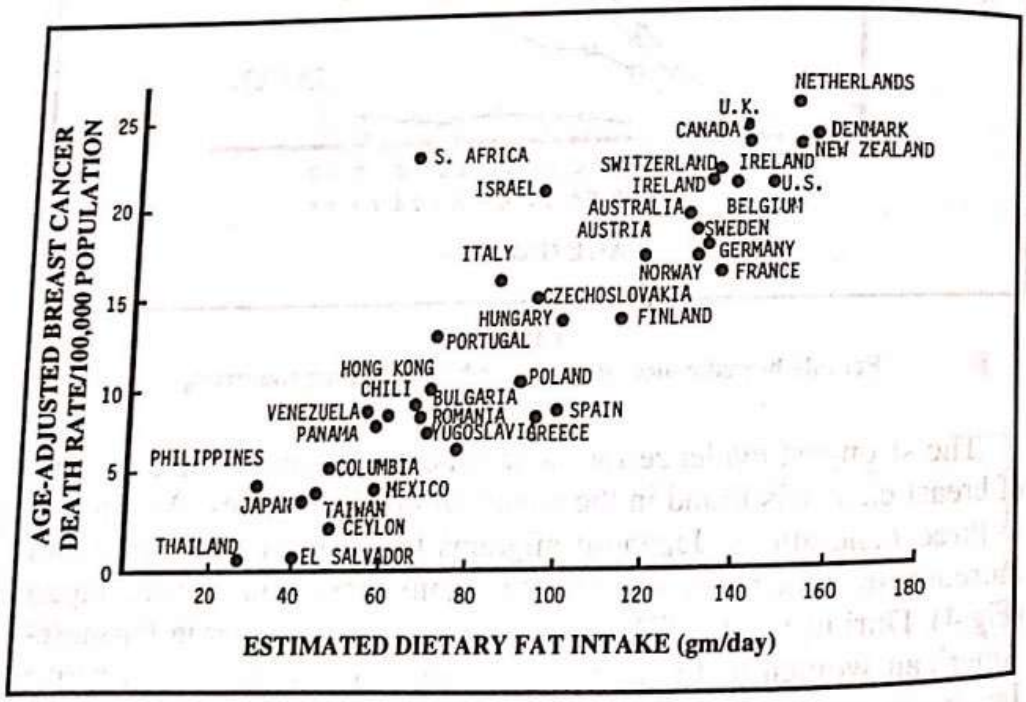


Fig.5

Correlation between age-adjusted death rates from female breast cancer and per capita consumption of fat. (from Carroll and Khor, 1975)

A positive correlation between breast cancer mortality and daily per capita consumption of fat has been demonstrated by a number of researchers (Fig.5). Hirayama[23] correlated breast cancer incidence in twelve different districts of Japan with specific food consumption patterns. Of the food items studied, the highest positive correlation was found for pork followed by total animal fat intake.

Experimental studies showed that spontaneous breast tumour incidence rates in female DBA mice were higher in those fed an isocaloric high-fat diet than those fed a low-fat diet, and through all the experimental studies one point stands out clearly: high intake of dietary fat increases the incidence of mammary cancer in rodents. (Fig.6)[24]

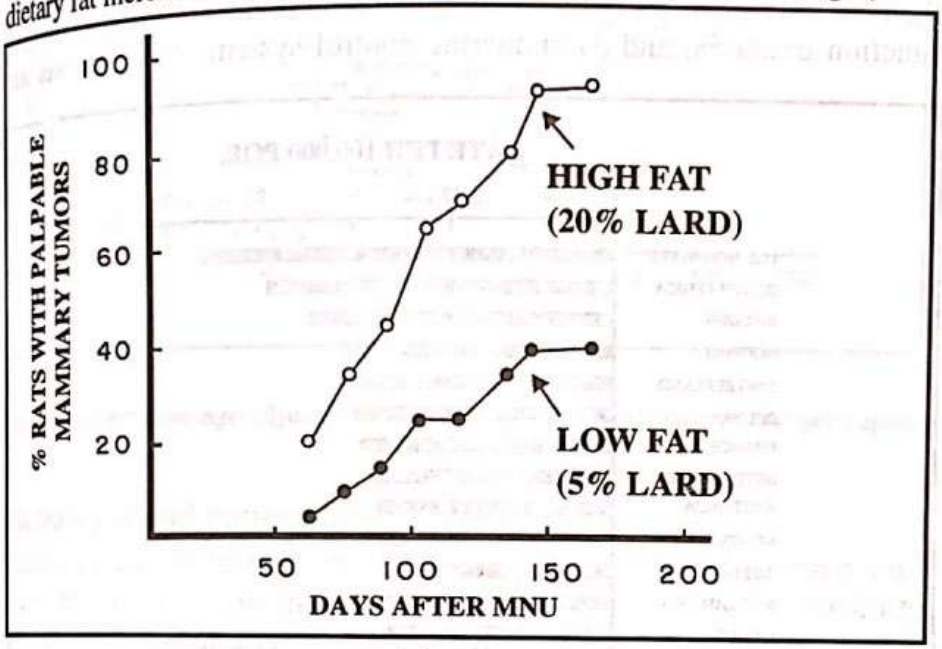


Fig.6

(% lard) diet. The median lateral period (time when 50% of tumour-bearing rats had developed tumours) was 83 days in the high-fat group and 103 days in the low-fat group. The tumour incidence differed significantly from the eightieth day on (P<0.01). (From Chan et al., 1977)

The possible mechanism(s) by which dietary fat may exert its effect on breast cancer have been postulated by Hopkins and West[25] and others[26,27] as:

a) Direct effects at the level of the mammary gland. These effects are based on the physical and chemical properties of fat, the formation of lipid peroxides, alterations in membrane structure and/or function, and enhanced prostaglandin synthesis. Since polyunsaturated fatty acid (PUFA) is converted by free radical reactions to lipid peroxides, a model involving breast cancer and lipid peroxidation has been advanced. Lipid peroxidation has been associated with a variety

of pathological processes[28] including mutagenesis and carcinogenesis. It is possible that increased peroxidation of membrane lipids results in alterations in the function of transformed mammary cell membrane which, in turn, permit increased rates of growth,[25] or that lipid peroxidation and free radical processes accompanying it are primarily associated with the activation of procarcinogens.[29] Since lard contains 67 per cent polyunsaturated fatty acid, its effect is more prominent in the process of carcinogenesis.

b) Indirect effects of fat could be mediated by host systems remote from the mammary gland. In this case the dietary fat secondarily stimulates mammary tumour growth by modifying the physiology of the host through altering the: 1) immune rejection responses, 2) mixed function oxidases, and 3) endocrine control system. Also, fat has an

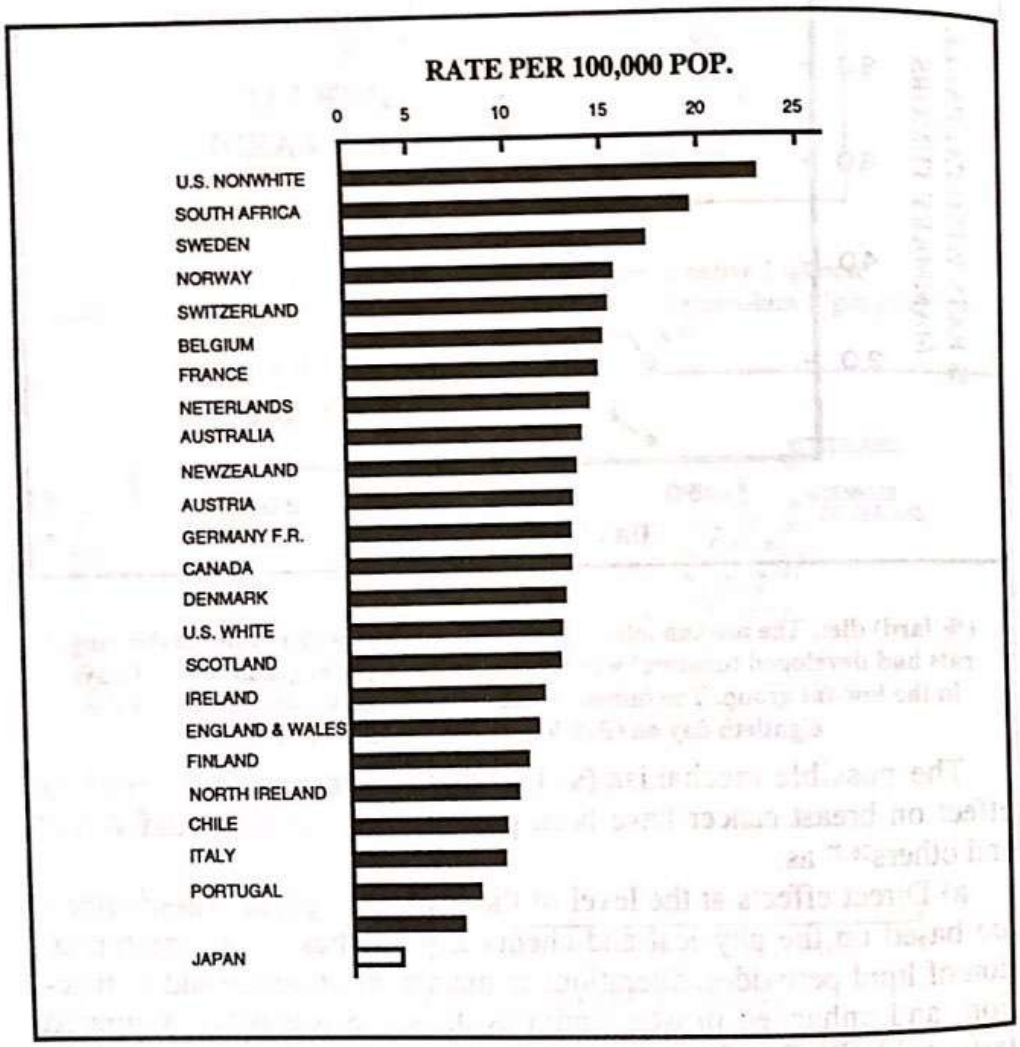


Fig.7

Age-adjusted death rates for prostate cancer in different countries, 1966-67. (From Segi and Kurihara, 1972)

enhancing effect on breast cancer development through altering the circulating prolactin levels but not oestrogen levels. Prolactin is proposed to mediate the fat effect by virtue of its duel capacity as a liporegulatory hormone and as a promoter of mammary tumour development.[30]

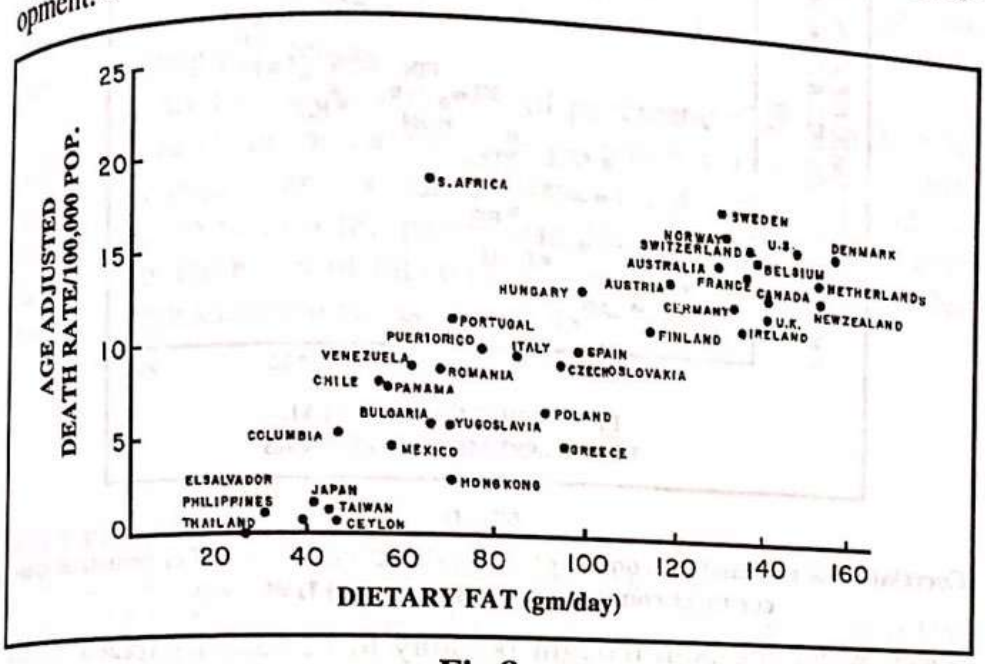


Fig.8

Correlation between age-adjusted death rates from prostate cancer and per capita consumption of fat

Dietary fat and cancer of the prostate

Cancer of the prostate is common in the US and other Western countries, and uncommon in Japan and Africa[31] (Fig.7). One striking difference between diets in high and low-risk areas is the fat intake (Fig.8) which accounts for 40 per cent of the daily calories in high-risk areas and 20 per cent of calories in low-risk areas.

Clinical studies have shown that the connecting link between dietary fat and the incidence of prostatic cancer is hormonally dependent.[32] Any factor that affects hormonal secretion, retention, and in particular the sensitivity of the target organ and/or cells, influences the frequency of this cancer.[33] Since fat may modify hormonal systems, it has the potential of inhibiting or enhancing tumourogenesis.

Dietary fat and endometrial cancer

The incidence of endometrial cancer is highly correlated with levels of fat consumption (Fig.9). The incidence of endometrial cancer is also highly correlated with those of breast cancer and colon

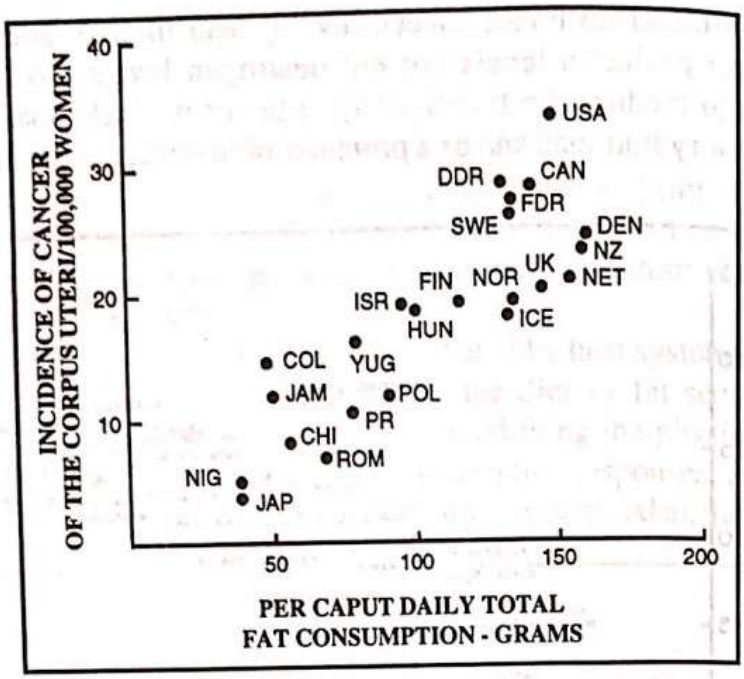


Fig.9

Correlation of national fat consumption levels with incidence of endometrial cancer in 23 countries. (Armstrong and Doll, 1975)

cancer, which are both thought possibly to be casually related to fat consumption.[34]

Epidemiologic studies have identified the following factors as associated with a high individual risk of endometrial cancer – obesity, early menarche, late menopause, diabetes mellitus, and excessive production of oestrogen – all of these factors may be explicable through a common mechanism which is dietary excess of fat. The precise role of oestrogens in the genesis of endometrial cancer is still uncertain. It has been suggested that oestrone may be directly carcinogenic.[35] It is possible, however, that excessive endometrial stimulation by oestrogens may facilitate the action of other carcinogens. If this is the case and diet is the principal determinant of excessive oestrogen production in women with endometrial cancer, then this is another example of an effect of diet on the susceptibility of a tissue to carcinogenesis.

Seventh-Day Adventist women in general (about 50 per cent of whom are vegetarian) have about a 40 per cent lower mortality from endometrial cancer than the general population.[8,9] This is consistent with the rôle of fat in the incidence of endometrial cancer.

Dietary fat and cancer of the pancreas

Studies on immigrants have provided valuable information on the

influence of fat in the genesis of pancreatic cancer. A study on Japanese immigrants to the USA showed that the standardized mortality rates for pancreatic cancer was higher among Japanese-Americans as compared with white Americans. Similarly, the rate incidence of pancreatic cancer among religious groups who adhere to non-pork diets, such as Seventh-Day Adventists, are in in the vicinity of 50–75 per cent of the general rates.[9]

The hypothesis for the aetiology of pancreatic cancer by Wynder is that fat causes an increase in bile excretion which, in turn, may contain carcinogens and/or co-carcinogens and promoters, and that this bile, refluxed into the pancreatic duct, may cause pancreatic cancer. Also, the effect of fats on the composition of the biliary bile acid have been shown to act as promoters.

REFERENCES

1. Wynder, E.L., Shigematsu, T., *Cancer* 1967; 20:1520–1561.
2. Wynder, E.L., Kajitani, T., Ishakawa, S., Dodo, H., and Takano, A., *Cancer* 1969; 23:1219–1220.
3. Bjelke, E., *Scand.J. Gastroenterol.* 1974; 9 (suppl.31), 1–253.
4. Correa, P., Haenszel, W., In: *Advances in cancer, Res.* Klein, G., Weinhous, S., (eds). Academic Press, New York 1978; 1–141.
5. Weisburger, J.H., Reddy, B.S., and Joftes, L.D., *Colorectal cancer.* International union against cancer, Geneva 1975.
6. Nigro, N.D., Singh, V.D., Campbell, L.R., and Pak, S.M., *J. Nat. Cancer Inst.* 1975; 54:429–442.
7. Reddy, B.S., Narisawa, T., Vukusich, D., Weisburger, H., and Wynder, L., *Proc. Soc. Exp. Biol. Med.* 1976; 151:237–2239.
8. Lemon, F.R., Walden, T., and Woods, W., *Cancer* 1964; 17:486–497.
9. Phillips, R.L., Cancer Res. 1975; 35:3513–3522.
10. Enstrom, J.E., *B.J.Cancer* 1974; 32:432–439.
11. Lyon, J.L., Gardner, W., Lauber, R., and Smart, R., *Cancer* 1977; 39:2608–2618.
12. Wynder, E.L., Mabuchi, K., and Whitmore, F., *Cancer* 1971; 28:344–360.
13. Reddy, B.S., Wynder, L., *J.Nat. Cancer Inst.* 1973; 50:1437–1443.
14. Gregor, O., Toman, R., and Prusova, F., *Gut* 1969; 10:1031–1034.
15. Aries, V., Crowther, S., Drasar, S., Hill, J., and Williams, O., *Gut* 1969; 10:334–335.
16. Hill, M.J., *Am.J.Clin.Nutr.* 1974; 27:1475–1480.
17. Coombs, M.M., Bhatt, S., and Croft, J., *Cancer Res.* 1973; 33:832–837.
18. Reddy, B.S., Watanabe, K., *Cancer Res.* 1979; 39:1521–1524.
19. Hill, M.J., Drasar, S., Aries, C., Crowther, S., Hawksworth, B., and Williams, O., *Lancet* 1971; 1:95–100.
20. Reddy, B.S., Hirota, N., *Fed Proc.* 1979; 38:714.
21. Reddy, B.S., Harisawa, T., Vukusich, D., Weisburger, H., and Wynder, L., *Proc. Soc. Exp. Biol. Med.* 1976; 151:237–239.

22. Buell, P., *J.Nat. Cancer Inst.* 1973; 51:1479–1483.
23. Hirojama, T., *Prev. Med.* 1978; 7:173–175.
24. Chan, P.C., Cohen, A., *J.Nat. Cancer Inst.* 1974; 52:25–30.
25. Hopkins, G.J., West, E., *Life Sci.* 1976; 19:163–1116.
26. Hankin, J.H., Rawlings, V., *Amer.J.Clin.Nutr.* 1978; 31:2005–2016.
27. Miller, A.B., *Cancer* 1977; 39:2704–2708.
28. Dormandy, T.L., *Lancet* 1978; 2:647–650.
29. Floyd, R.A., Soong, M., Sturat, A., and Reigh, L., *Arch. Biochem. Biochem. Biophys.* 1978; 185:450–457.
30. Meier, A.H., In: *Comparative endocrinology of prolactin* (Dellman, H.D., Klachko, D.M., eds.). Plenbum, New York 1970; 153–191.
31. Doll, R., Muir, C., and Waterhouse, J., (eds). In: *Cancer incidence in five continents*. vol.II. International union against cancer. Berlin and New York 1970.
32. Fergusson, J.D., In: *Endocrine therapy in malignant disease* (Stoll, B.A., ed). Saunders, London 1972; 237–246.
33. Wynder, E.L., Mabuchi, K., and Whitmore, F., *Cancer* 1971; 28:344–360.
34. Wynder, E.L., Reddy, B.S., *J. Nat. Cancer Inst.* 1979; 54:7.
35. Silteri, P.K., Schwarz, B., and MacDonald, P., *Gynecol. Oncol.* 1974; 2:228.

CHAPTER ELEVEN

BREAST-FEEDING AND ISLAMIC TEACHINGS*

Abstract

Islam encourages mothers to nurse their babies for prolonged periods (up to two years). Meanwhile, Islamic teachings free the lactating mother of any responsibility for her sustenance, even if she is divorced. She is absolved from any other bondage, in order to give all her time and care to her baby.

The implications of these teachings, and their good effect on both the health of the baby and the mother are discussed here.

At one time, breast feeding was the only source of nourishment for new-born infants until they were capable of taking supplementary feeds. If the mother was unable to nurse her baby for any reason, or if she died in puerperium (which was not uncommon) then a wet nurse would take her place. It was uncommon to feed small babies with milk obtained from animals – cows, goats, sheep, etc.

It was not until the end of the First World War (1914–18) that artificial feeding started. It spread rapidly throughout the developed countries until the beginning of World War II, when the production of manufactured milk declined. After the war, there was another surge in the use of infant formula, which continued until the sixties. In the early seventies and on into the present, the campaign against artificial feeding grew. In the western countries, more than 67 per cent of women now nurse their babies for some time.[1]

---

* Co-Author: Dr Hassan Chamsi-Pasha MD, MRCP, MRCPI, Chief of Critical Care Unit, King Fahd Armed Forces Hospital Jeddah

However, in the developing countries, these trends took many decades to emerge. Artificial feeding was introduced only after World War II, and it took the milk companies many decades to convince the poor ignorant mothers of the assumed benefits of bottle-feeding. The trend is, however, facing a fierce battle, waged by the health authorities, WHO and health workers.

In the Islamic countries, it may well be advantageous for the health authorities to propagate Islamic teachings regarding breast-feeding. This will greatly help in the battle against bottle-feeding. Islam encourages mothers to nurse their babies for as long as two years.

The following verses *(ayat)* from the *Holy Qur'an* lay the basis of the rules:

1. 'The mothers (including divorcees) shall breast-feed their children for two whole years, if they wish to complete the period of nursing. The father shall bear the cost of their feeding and clothing on equitable terms. No soul [shall] have a burden laid on it greater than it can bear. No mother shall suffer because of her child. Similarly, the father should not suffer. The same duties rest upon the heir (i.e., if the father dies). If they [the parents] both decide on weaning [the child] by mutual consent and after due consultation, they are not to blame. Also, they are not to blame if they decide on a foster mother provided they ensure, in a fair manner, the safety of the child. Remain conscious of God and know that God sees all that you do.'[2]
2. 'His mother bore him by strain after strain. His nursing [suckling] period lasts two years. Be grateful to Me and to your parents.'[3]
3. 'In pain did his mother bear him, and in pain did she give birth to him, and her bearing and his suckling period took thirty months.'[4]
4. 'Let the woman divorced [in the waiting period] live in the same house you live in and in the same manner, in accordance with your means. Do not harass them, and if they are pregnant spend freely on them until they deliver their burden. If they nurse your offspring, give them their due recompense. Counsel each other in a fair manner about the child's future. If you get in discord, let another woman nurse [breast-feed] him; and the father should pay for the nurse. The wealthy should spend in accordance to his wealth, and the poor should spend in accordance to his income. God will grant after hardship ease.'[5]

From these verses we understand the following points regarding the 'Nursing of the Child':

1. The mothers are encouraged to nurse [suckle] their babies for a period of up to two years.
2. Even if the mother is divorced, she retains the right to nurse her child for that period. The father should pay for her cost of living as she will be fully occupied by nursing his offspring.
3. If the parents are separated [divorced], they should counsel each other frequently, in a fair way, for the sake of the child's future.
4. If they decide that the mother cannot nurse the baby (e.g. remarried to another man, or lacks milk in her breasts, or whatsoever the reason) they should decide on a wet nurse. The wet nurse in Islam is a foster mother. She is considered as a second legal mother. Her children rank as brothers and sisters to the baby she breast-feeds, and her husband becomes *in loco parentis* to the baby. Thus, no marriage is allowed later on between the baby and any of his foster mother's children, brothers, sisters and husband.[6]
5. If the father dies, his heir should support both the nursing mother and her baby for the whole period of breast-feeding. The custody of the baby remains in the hands of the mother. During the rein of Khalifa Omar Ibn Al-Khatab, every Muslim in the community was getting social security benefits from 'Baitulmal', the government treasury, except the new-born babies until they were weaned. When Omar noted that mothers tended to wean their babies too early, to get the benefit of social security, he cried 'How many young Muslim souls you have deprived from their food. O Omar!' He then ordered that every new-born should get the subsidy from the day he is born.[7,8]
6. From *Sura Al Bakara 2/233* and *Sura Al Hakaf 46/15.* Ali Ibn Abi Talib deduced that the shortest period of pregnancy to bring a viable child was six months.[9] It was not recognized until recently that a six-month baby is viable. Up until the sixties of this century, it was taught in the schools of medicine that viability is not possible before 28 weeks – i.e., seven months.

The Islamic communities paid great attention to breast-feeding and t nurses were common until recently in most Islamic countries. Even the mother nurses her baby, it is not uncommon for a neighbour or ative, or a friend, to participate in breast-feeding the newcomer.

The Prophet Muhammad himself (PBUH) was nursed by Halima Assadia, beside his mother Amina Bint Wahb. This custom of dual or multiple nursing mothers remained until quite recently.

Such deep inter-community dependence, with a system of large and extended families including the grandparents, aunts and uncles, had the advantage of taking part of the burden from an inexperienced young mother. If we remember that many girls were marrying at the age of fifteen or even less, and, similarly, boys under eighteen were often married – not surprisingly, they both needed the help and guidance of the more experienced generation.

The author (M.A.A.) personally saw a woman in a clinic in Jeddah who had become a grandmother at the age of 27 years. Al Imam Al Shafi saw a girl of 21 years in Sana'a who was already a grandmother.[10] This emphasizes the need for the help and co-operation of the older generation to the young and inexperienced mothers.

However, the tide of western civilization is quickly changing the pattern of social and cultural attitudes in all Muslim countries. This is more pronounced in the urban areas.

Breast-feeding is rapidly declining, not only in the urban areas but even in the rural areas. There are many causes for this:

i. the influence of the western and industrial culture;
ii. the dramatic changes in the structure of Islamic and third world societies; and
iii. promotion of bottle-feeding by the giant companies in the West.

Debora Hefty, in her paper 'History and Trends of Breast-Feeding' at the symposium on current trends in breast-feeding – (King Faisal Specialist Hospital, Riyadh, 30 October 1983) – accused the baby food companies of being the vital cause of the decline in breast-feeding in the developing countries. The companies saw the potential of increasing their sales and profits within the large and rising population of the developing world. The annual sales of these companies to the third world alone have already exceeded $2,000 million per year.[11]

The WHO/UNICEF consider these companies responsible for the decline in breast-feeding in the third world, and have strongly advised the governments of the third world to ban the advertising of manufactured baby food.[11]

Bottle-fed infants in the third world often receive dilute and contaminated feeds, containing little nutrients and massive doses of micro-organisms. It is estimated that 9.4 million cases of severe malnutrition occur in the third world annually; many of which are due to bottle-feeding.[12]

Similarly, there are about ten million deaths in infants in the third world annually, due to gastroenteritis. A great percentage of these deaths are due to bottle-feeding.[13] Thus we find millions of babies die annually due to the widespread use of bottle-feeding in the third world. Many of them could be saved by adopting breast-feeding.

All those bodies concerned with infant health, including WHO/UNICEF, stress the importance of breast-feeding, especially in the third world.[14]

An editorial in the *Lancet* warned of the dangers of the spread of infant formulas in the third world. It states: 'These infant milk formulas are increasingly used by poor urban mothers, and are now spreading widely in the rural areas. The preparations are mainly manufactured by international companies who compete with each other, using numerous local representatives whose jobs depend on sales. They promote their products with much advertising which has often been misleading. Many mothers have been wrongly persuaded to use these products for this and that reason, and there has been a decline in breast-feeding with disastrous results in some communities.[15]

Breast-feeding in these poor countries of the third world will not only save $2,000 million annually – badly needed for projects to promote health and education – but also has many other advantages. Human milk is meant for human infants. It is species-specific. Nutritionally, it is exactly what the normal new-born needs for optimal growth and development. Although medical science has made giant strides in nutrition, only part of the nutritional benefits of human milk have been duplicated biochemically. The specific enzymes (numbering more than one hundred) are not present in prepared formulas. No biochemical solution can totally replace a mother's milk in providing living cells, active enzymes, immunoprotection, infection protection or psychological benefits.[16]

There are no synthetic compounds, no preservatives and no artificial ingredients in breast milk. It is always available at the right temperature and the right consistency.

Many studies indicate that breast-fed infants develop fewer gastrointestinal infections, respiratory illnesses and allergic reactions than do artificially-fed infants. These differences are most striking in the developing countries, where poor sanitary practices prevail.[17,18] In developing countries it is a matter of life and death, where the death rate in bottle-fed infants is three times that of breast-fed infants in the first year of life.[16] However, a large degree of protection against illness is afforded to breast-fed infants in the developed countries of the world as well. Protection is based on the presence of secretory

antibodies in colostrum, the bifidus factor in human milk, which promotes development of characteristic intestinal microflora of *lacto-bacillus bifidus*, and other defence factors such as secretory IgA, Lactoferrin, Lysozyme and leucocytes.[18]

The gut flora resulting from breast-feeding an infant is basically composed of *lactobacillus bifidus*, which requires a specific growth factor (bifida factor) which is more readily found in human milk than in cow's milk.[19]

All classes of immunoglobulins are found in milk, but IgA comprises 90 per cent of immunoglobulins in human colostrum and milk. The output of immunoglobulins by the breast is maximal in the first week of life and declines thereafter.[20] These IgA antibodies have additional antigenic structures corresponding to the secretory IgA (sIgA) which is a specialized antibody for mucosal defence. Early colostrum may contain 20 g/1 of sIgA, decreasing within a week to 0.5 g/1.[19,20]

Growth of the mumps, influenza, vaccinia, and Japanese B encephalitis viruses can be inhibited by substances in human milk.[21] Other studies have shown that antitoxins against vibrio cholera are secreted in the colostrum and are not absorbed by the intestine of the baby.[22] Breast milk also contains more than 100,000 blood cells per millilitre, most of which are leucocytes. In human milk, the leucocytes are predominantly mononuclear cells and macrophages. Both T and B lymphocytes are present.[20]

Breast-fed infants have been shown to have a lower incidence of allergic diseases when foreign food antigens are avoided for the first six months of life. In one study of more than 20,000 infants, those who were fed artificially were seven times as likely to develop eczema as those who were completely breast-fed. Infants are never allergic to their mother's milk, whereas allergy to cow's milk is not uncommon. The breast-fed infant rarely gets diarrhoea and rarely becomes constipated, since breast milk does not form hard stools in the intestinal tract.[18] The human milk is easily digested, whereas about half the proteins in cow's milk is passed in the stools undigested.

Colostrum, the premilk secretion, has a high protein, vitamin A, immunoglobulin, sodium and chloride content, and a lower carbohydrate, potassium and fat content than mature breast milk. Colostrum has a normal laxative action and is an ideal natural starter food.[20]

It is essential that the physician is knowledgeable about the composition of human milk and cow's milk. It is interesting to note that growth rates of the human infant and the calf are different. An

infant takes two to three times longer than a calf to double its birth weight.[18]

The fat of cow's milk (butterfat) contains, predominantly, saturated fatty acids and is less well digested by infants than unsaturated fatty acids such as oleic acid, and adequate amounts of polyunsaturated fatty acids such as essential linoleic acid.[23,24] It is worth noting that this is the kind of diet recommended for adults nowadays. The fat composition in human milk allows for excellent fat and calcium absorption and ensures that all essential fatty acids are provided.[18] The total ash content of human milk (0.2%) is less than one-third that of cow's milk (0.7%), thus providing a greater margin of safety for renal excretion during illness in early infancy.[23]

Suckling at the breast is good for an infant's teeth and jaw development. During breast-feeding, the jaw muscles are strenuously exercised, encouraging the development of well-formed jaws and straight healthy teeth.

Rota viruses are the most important causative agents of gastroenteritis in infants. Breast-fed babies are less prone to get this infection than bottle-fed infants.[25]

Evidence is mounting to suggest that breast-feeding is also protective to a degree against obesity, allergy, cancer, arteriosclerosis, early onset of diabetes, cystic fibrosis, coeliac disease and other metabolic disorders.[14,16,26–29] These case-controlled studies found an increased risk for insulin-dependent diabetes mellitus among children who were never breast-fed, or who were breast-fed for only a short period.[27,29]

There are also distinct benefits from breast-feeding for the mother. These include:

a) Stimulation, by sucking, of oxytocin secretions, which fosters uterine contractions and hastens post-partum uterine involution;
b) convenience, obviating the need for formula preparation, nipple and bottle sterilization and refrigeration of formula when travelling;
c) economy;
d) possible decreased risk of post-partum thromboembolism and breast cancer in women who have nursed their children;
e) emotional satisfaction and sense of fulfilment gained from breast-feeding.[18]

The breast-feeding relationship constitutes the foundation for the development of all human social relationships, and the communication the infant receives through the warmth of the mother's skin constitutes the first of the socializing experiences of his life.[30] Babies gain a sense of well-being from secure handling, and mothers who

nurse their infants successfully often seem more confident in their management of them.

Lactation also influences the return to the pre-pregnancy state for the mother. Getting back 'in shape' is facilitated by utilizing the extra weight of pregnancy for milk production. Thus, breast-feeding women return to baseline weight more quickly.[23,31]

The protein of human milk supplies tyrosine, while the phenylalanine content is so low that even infants with hyperphenylalaninaemia tolerate breast-feeding to cover up to 80 per cent of their energy need.[21,32]

Human milk contains Prostaglandin PGE2 which acts as a zinc ligand, while cow's milk contains none.[33] Zinc deficiency is, therefore, more liable to occur in bottle-fed infants or after premature weaning of breast-fed infants.

A rare hereditary autosomal recessive disorder – *Acrodermatitis Enteropathica* – is associated with zinc deficiency. Manifestations of the disease only occur if the baby is bottle-fed or weaned prematurely from his breast-feeding. If untreated, such babies die from zinc deficiency. It was found that giving breast milk cured the condition because of the high level of zinc it contains. But zinc supplement can be given, and such babies live and thrive.[34]

The consensus of opinion of an international group of scientists[35] was that the maximum birth-spacing effect of breast-feeding is achieved when a mother fully breast-feeds and remains amenorrhoeaic. When these two conditions are fulfilled, breast-feeding provides more than 98 per cent protection from pregnancy in the first six months.

IN SUMMARY: breast-feeding is safer. The infant fed on mother's milk is less likely to develop any of the following: gastroenteritis, neonatal tetany; hyperosmolar dehydration; cow's milk allergy; rickets; malabsorption; infantile eczema; and bacterial infections.

Hospital practises that may inhibit successful breast-feeding include delay in onset of breast-feeding, formula supplementation, and distribution of formula samples at discharge.[36]

There are now active programmes throughout the USA to encourage women to breast-feed and to provide support systems to facilitate success. The San Diego Lactation Programme was launched at the University of California San Diego Medical Center in 1977, to promote successful breast-feeding, while simultaneously offering clinical teaching opportunities for medical and nursing students. At the time of the programme's initiation, few of the 50–60 per cent of mothers who were discharged from the maternity unit nursing their infants, continued to breast-feed beyond six to eight weeks.

Subsequent to the training, procedures were instituted gradually over several months that allowed normal new-borns to be nursed within the first half-hour after delivery, and on request thereafter. Routine use of formula, water, bottles, pacifiers and nipple shields was discontinued. In addition, rather than leaving the hospital with an inappropriate sample pack of infant formula, with its implicit message of doubt, all nursing families began to receive a discharge gift of careful counselling and the telephone number for the San Diego Lactation Programme's telephone consultation service.[37]

An editorial in the *Lancet* confirmed that at least 95 per cent of mothers are able, if they wish, to breast-feed their infants for four to six months; and can provide enough milk over this period to allow their babies to grow to their full protection.[15] In another *Lancet* editorial, it was clearly stated that exclusive breast-feeding is the best in early infancy.[38]

The *Holy Qur'an* has stressed the importance of prolonged breast-feeding (up to two years). The advantages of this prolonged breast-feeding are beginning to be known. Some studies have shown that breast-feeding infants may not need complementary or supplementary feeding during the first nine months.[12]

The Islamic teachings encourage mothers to breast-feed their children. The renowned Andalusian jurist Ibn Hazm said: 'A mother should nurse her baby even if she was the daughter of the King. She is not exempted from the duty unless she is incapable of nursing.'[39]

The nursing mother should be financially supported by the husband even if she is divorced. If the father of the baby dies, his heirs should support her fully during the whole period of lactation. If there is no heir, the government is responsible for her full support.[40]

If the Islamic teachings are adhered to, many evils that befall children and their mothers could be avoided.

REFERENCES

1. Editorial: Advice about milk for infants and young children. *Lancet* 1987;I:843 – 844.
2. *Holy Qur'an*, Sura 2, Aya 233.
3. *ibid.*, Sura 16, Aya 14.
4. *ibid.*, Sura 46, Aya 15.
5. *ibid.*, Sura 65, Aya 6–7.
6. Sayed Qotob, *Fi Dilal Al Qur'an*. Jeddah, Dar El Elmi 1886; vol.1:599–605.
7. Ibn Saad, *Kitab Al Tabagat*, vol.1, 217.

8. Tantawi, A., Tantawi, N., *Akhbar Omer*, Beirut, Al Maktab Al Islami 1983; 8th edn. 96.
9. Ibn Qodama, Al Moghani, Beirut, *Dar Al Kitab Elmiya*, vol.7:477.
10. Al Nawawi, *Al Majmoo Sharh AlMohadab*. Beirut, Dar AlFikr, vol.2:371.
11. Hefty, D., History and trends in breast-feeding. Proceedings of the symposium on current trends in breast-feeding, 3 October 1983, King Faisal Hospital, Riyadh.
12. Elidrissy, A.T.H., Islamic viewpoint of breast-feeding; *vide supra.*
13. WHO contemporary patterns of breast-feeding, report on WHO collaborative study on breast-feeding. WHO Geneva 1981.
14. Victoria, C.G., *et al.*, Evidence for protection by breast-feeding against infant deaths from infectious diseases in Brazil. *Lancet* 1987; II:319–21.
15. Editorial: infant feeding today. *Lancet* 1986; I:17–18.
16. Lawrence, R.A., Breast-feeding and medical disease. *Med.Clin.N.America* 1989; 73:583–603.
17. Lawrence, R.A., Preface to breast-feeding. *Clinics in Perinatal* 1987; 14:xi–xii.
18. Eiger, M.S., The feeding of infants and children. *Primary pediatric care*, Hoekelman, R.A. (ed.). St. Louis, The C.V. Mosby Co. 1987; 168–171.
19. Infant Feeding. In: *Textbook of paediatrics;* Forfar, J.D.; London, Churchill Livingstone 1985; 261–2.
20. Pernoll, M.L., (ed.), *Current obstetrics and gynecology.* California, Appleton & Lange 1987; 237–8.
21. Behrman, R.E., (ed), *Nelson's textbook of pediatrics*. Philadelphia, W.B. Saunders 1987
22. Class, R.I., Protection against cholera in breast-fed children by antibodies in breast milk. *N.Engl.J.Med.* 1983; 308:1389.
23. Graza, C., Schanler, R.J., Butte, N.F., Motil, K.J., Special properties of human milk. *Clin. Perinatal* 1987; 14:11–32.
24. Chen, Y., Yus, Li Wx., Artificial feeding and hospitalization in the first eighteen months of life. *Pediatrics* 1988; 81:52.
25. Duffy, L.C., Repinhoff-Talty, M., Eyres, T.E., *et al.*, The effects of infant feeding on rotavirus-induced gastroenteritis. *Am.J.Dis.Child.* 1986; 14:1164.
26. Kovar, M.G., Serdula, M.K., Marks, J.S., *et al.*, Review of the epidemiologic evidence for an association between infant feeding and infant death. *Pediatrics* 1984; 74 (suppl.): 619.
27. Mayer, E.J., Hamman, R.F., Gay, E.C., *et al.*, Reduced risk of insulin-dependant diabetes mellitus among breast-fed children. *Diabetes* 1988; 37:1625.
28. Davis, M.K., Savitz, D.A., Granbard, B.I., Infant feeding and childhood cancer. *Lancet* 1988; II:365–8.
29. Mayer, E.J., Hamman, R.F., Gay, E.C., *et al.*, Reduced risk of insulin-dependent diabetes mellitus among breast-fed children: a case-controlled study. *Diabetes* 1988; *vide supra.*
30. Montagu, A., *Touching: the human significance of the skin*. New York, Harper & Row 1971.
31. Lawrence, R.A., The management of lactation as a physiologic process. *Clin. Perinatal* 1987; 14:1–10.
32. Borresen, M.C., Breast milk in neonatal care. In: *Advances in clinical nutrition*, Johnston, I.D.A., (ed.). Lancaster MTP Press Ltd. 1983; 171–6.
33. Johnson, M.L., Acrodermatitis Enteropathica. In: *Cecil Loeb textbook of medicine*, Vyngaarden, J., Smith, L., (eds.). Philadelphia, Saunders Co. 1985; 2252.
34. Davies, S., Stewart, A., *Nutritional medicine*. London, Pan Books 1987; 64.
35. Consensus statement: Breast-feeding as a family planning method. *Lancet* 1988; II:1204–5.

36. Feinstein, J.M., Berkelhamer, J.E., Gruszka, M.E., Wong, C.A., Carey, A.E., Factors related to early termination of breast-feeding in an urban population. *Pediatrics* 1986; 78:2105,
37. Naylor, A., Wester, R., Providing professional lactation management consultation. *Clin. Perinatal* 1987; 14:33–8.
38. Editorial: Advice about milk for infants and young children. *Lancet* 1987; I:843–4.
39. Ibn Hazim, Al Mohla, Beirut: *Dar Al Kitab Al Ilmiyah* 1988; vol.10, p.115; problem no.2013.
40. Al Qortobi, *AlJami LiAhkam alQur'an*, Beirut, *Dar Al Kitab Al Ilmiyah*, vol.3:106–114; Sura 2, Aya 233.

CHAPTER TWELVE

THE IMMUNOLOGY OF HUMAN MILK AND ISLAMIC TEACHINGS FORBIDDING MARRIAGE BETWEEN FOSTER-KINDRED* A CORROBORATIVE STUDY

Introduction

Islam forbids marriage between foster-milk kindred – الاخوة من الرضاعة – but encourages feeding by the mother and/or wet nurse, who is considered as a foster-mother.

Human milk provides a source of strong antigens and viable cells which may cause *in-vivo* immunologic disorders in the case of marriage between foster-milk kindred but not in foster-nursed infants. This matter correlates and meets well with the teachings of Islam on this subject.

In this chapter human milk is described as a source for epithelial cytoplasmic membrane and viable lymphocytes. It also discusses the correlation between Islam and medical reality, and one possibility for an immunologic disorder in the case of marriage between a foster-brother and his foster-sister.

The attempt is made to correlate the Islamic teachings in this respect in the light of present scientific knowledge. Certainly, more can be gleaned by corroborative studies that link Islamic teachings as revealed in the *Holy Qur'an* and *Traditions* of the Prophet (PBUH) to that scientific knowledge. They may also open untrodden paths in scientific, medical and ethical fields.

Human breast milk as a source of epithelial cytoplasmic membrane

Human milk exists as fat droplets (cream) in an aqueous serum (skimmed milk). The fat droplets, which range in size from 0.1–10μ,

* 1st author: Dr Mohammed Aymen Safi, Ph.D., Assist. Prof. of Microbology, Faculty of Medicine, King Abdul Aziz University, Jeddah

are stabilized in the milk serum by an external membrane known as the milk fat globule membrane (MFGM). The MFGM is shown to be derived mainly from the apical plasma membrane of the mammary secretory cells, the process which occurs during the secretion of the millk.

Secretion of the milk components occurs by two different mechanisms. During the first mechanism, fat droplets form within the lactating cells and move to the apical region, being finally expelled into the lumen entirely surrounded by apical plasma membrane (Fig.1).[1] Evidence for the secretion of the apical plasma membrane surrounding the milk fat globules was shown by electron microscopy[2,3] and biochemically.[4,5]

During the second mechanism, the part of the apical membrane which was lost during the first mechanism is now replaced (Fig.1) while the Golgi vesicles are emptying their contents of soluble milk components.

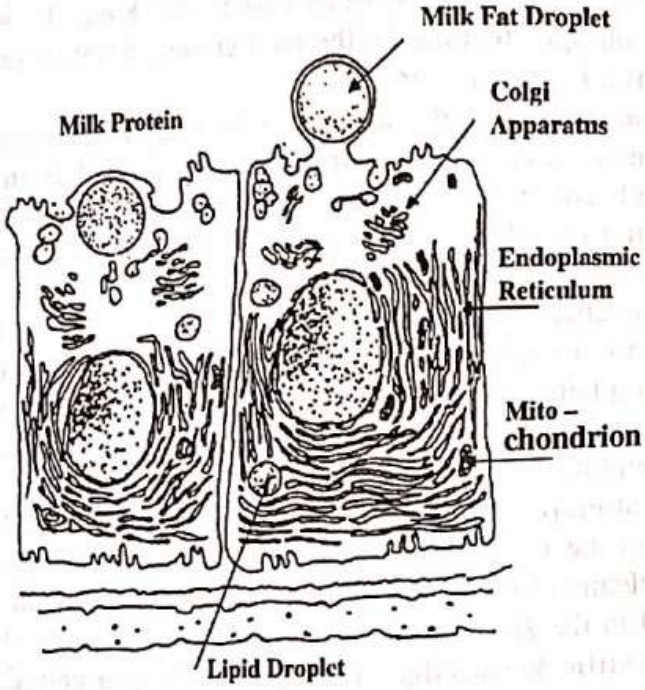


Fig.1
After Bargmann & Welch (1969)

Human Colostrum and Milk as sources of viable cells

It has become evident that a wide variety of soluble and cellular components and microbial agents are present in human milk and colostrum. Viable cells of all types of the lymphoid series are found

in the connective tissue of lactating mammary gland, passing through the glandular epithelium, and in the colostrum and milk.[6,7,8] Human colostrum has 3 to 6 x 10^6 cell/ml of which 70 to 80 per cent are macrophages but only 10 per cent are small lymphocytes and plasma cells.

Of this 10 per cent, half are T cells and a third are B lymphocytes.[1] The majority of the remaining 10–20 per cent of the cells are polymorphonuclear and few epithelial cells. Null lymphocytes (NK cells and K cells) are found with the intraepithelial lymphocytes of the small intestine but lacking in GALT (Gut associated lymphoid tissue) and the lamina propria,[9] and they have not been looked for in colostrum and milk.

Milk lymphocytes may be regarded as a selected population of those which migrate from GALT and BALT (Bronchus-associated lymphoid tissue) to (and through) other mucosa.[10,11] They include short and long-lived cells, antibody-forming cells, primed (memory) cells, and unprimed cells. Their movement through the alveolar epithelium of the mammary gland has been well followed, and details of this movement are reported by Seeling and Beer.[11] Some of them seem to have a protective rôle within the newborn's GI tract while others penetrate in functional state to the newborn recipient's circulation. However, material milk-borne cells must escape the process of digestion if they are to survive the gastrointestinal tract and reach the neonatal tissues in a viable form capable of initiating or continuing immunologic reactions.

Studies in human infants indicated that gastric conditions may not prejudice cell survival. It was found that despite the acidity of the human infant's gastric juice (pH=3.5) the output of Hcl is low in the first few months.[12] Furthermore, this acidity can be altered by the milk within a few minutes after an infant suckles human milk, in which the pH rises to more than 6.0 and then declines slowly over a three-hour period post-prandially.[13] It is also known that lymphocytes are more acid-resistant than other cell types.

Immunologic activities of human milk fat globule membrane

Immunologically milk fat globule membrane was shown to possess several antigens, the most important of which are TF antigen,[14] EMA antigen (epithelial membrane)[15] and the HLA–DRw antigen.[16]

Interestingly, the latter antigen was demonstrated by Newman *et al* on the MFGM, on the apical membrane of lactating cells – but not in normal non-lactating breast, benign or malignant tumours, nor in a

presumptive breast carcinoma cell line (MCF–7). Newman *et al*[16] reported that whether the breast epithelial cells synthesize HLA–DR molecules or acquire these passively from mononuclear cells which infiltrate during lactation is not yet resolved. However, it has been suggested that these antigens may act as a recognition or homing signal for lymphoid cells, which infiltrate the mammary gland during lactation.[17]

Immunologic activities of colostrum and milk lymphocytes

Recent attention has focussed on the immunologic characteristics of human colostrum and milk. Colostral lymphocytes were found to be immunologically reactive.[18] Parmely and Williams studied the MLR (mixed lymphocyte reaction) and reported that 'Colostral lymphocytes are generally just as reactive in MLR, as their blood cell counterpart', contradicting their earlier preliminary results which found them to be slightly hyporesponsive.[19] They also found that colostral lymphocytes from post-partum women do recognize stimulating antigenic determinant on their husband's leucocytes and this response to the paternal antigenic determinant gene is not affected by exposure to those antigens during pregnancy.[18]

Discussion and Conclusion

It is well-established that if viable suspensions of lymphocytes from an adult mammal are injected into an unrelated new-born of the same species, three things may occur:

a) induction of immunologic tolerance (unresponsiveness), depending on the time of injection and on the amount of the injected cells
b) initiation of an immunologic response (IR) leading to undesirable consequences such as rejection and ridding of the injected cells
c) the injected cells will attack the developing lymphomyeloid complex of the host, a fatal wasting syndrome which is called graft-versus-host disease (GVH)

As shown previously, milk presents a potential source of strong antigens and of viable lymphocytes for a sucking mammal. Therefore one can apply the above basic principle of transplantation and immunology to address which of the above three results may possibly occur in the case of foster-nursing and in the case of marriage between foster-kindreds.

1. Immunologic tolerance [result (a) above] needs repeated injections of small amounts of antigens during the first few months of life. It is also possible to induce immunologic tolerance by oral feeding of an antigen.[20,21] Islam considers that foster-nursing is conferring kinship by foster-nursing only when the infant suckles milk diet to the full – as the Prophet says 'one or two suckles are not enough' [for conferring kinship by foster-nursing].
   This means that the suckling infant is provided with large amounts of antigens – thus immunologic tolerance is out of the question.
2. Once the possibility for the occurrence of immunologic tolerance has been excluded, then one should think about the other two possibilities (b) and (c) mentioned above, – i.e., rejection of maternal antigens, and development of GVH disease.

Human milk is known to be harmless (but useful) for babies from the first day after birth and there are no reports of rejection of the suckled lymphocytes or other strong antigens. Also the maternal lymphocytes, despite their immunologic reactivity, do not attack the infant's tissue in the form of GVH disease. Neither of these two undesirable results have been observed or reported. In contrast, reports show that lymphocytes in milk represent a population of cells, that are already 'schooled' to assist the infant in his battle with the external microbial environment.[22]

Thus, according to immunology the maternal antigens and cells should be rejected and the maternal lymphocytes should attack and destroy the infant's tissue, but this is not true according to the real observations in mother-nursing and foster-nursing. This is really a contradiction (or at least a so-far unsolved problem) between the scientific teachings and the reality.

On the other hand, there is strong correlation between the previous real observations (on the safety of foster-nursing) and the teachings of Islam which encourages mother-nursing and foster-nursing. The Prophet himself was foster-nursed by Halima Alsaadia. And Allah says:

«والوالدات يرضعن أولادهن حولين كاملين لمن اراد ان يتم الرضاعة»

سورة البقرة - آية ٢٣٣

'Mothers shall suckle their children for two whole years; [that is] for those who wish to complete the suckling.'

Sura II:233.

It is therefore of great interest to find this correlation between the Islamic teaching and reality despite the contradiction between science and reality.

3. Absence of immunological disorders in foster-nursed infants should not exclude the possibility that these infants may develop immunologic diseases when they marry each other.

Islam forbids such marriages, as Allah says:

'Forbidden unto you are your mothers, and your daughters, and your sisters and your father's sisters, and your mother's sisters, and your brother's daughters and your sister's daughters, and your foster-mothers, and your foster-siblings.'

Sura 14:23

«حرمت عليكم امهاتكم وبناتكم واخواتكم وعماتكم وخالاتكم وبنات الأخ وبنات الأخت وامهاتكم اللاتي ارضعنكم واخواتكم من الرضاعة»

سورة النساء ـ آية ٢٣

To prove that immunologic disorders may occur in humans from such marriages is very difficult and needs thorough investigation and research. However, it is easier to make such a study in animals – such as the study reported by Head and Beer.[22]

The experiment and results are shown in Table I. Interestingly, the rats of group (c) had GVH reaction. Rats of group (d) did not have it because they received immunologically-tolerant lymphocytes.

Considering that mammals usually do not develop GVH when foster-nursed, one may then assume that GVH disease had developed later on because of the combination of foster-nursing and skin-grafting.

A model for adaptation of this study to the human situation is illustrated in Table II, from which one can expect that GVH disease can develop in the foster-nursed girl (who is married to her foster-brother) after her foetus has been delivered.

TABLE I.

Newborn Fischer (FI) rats born of normal mothers

Group (A)	**Group (B)**	**Group (C)**	**Group (D)**
fed by their normal Fischer mothers (to provide controls)	transferred immediately after birth to Lewis strain (LE) foster mothers	transferred to LE foster mothers after feeding from their own mothers for 24 hours	transferred immediately after birth to a genetically tolerant (FIXLE) F_1 hybrid foster mothers
Results	**Results**	**Results**	**Results**
Normal immunologic reactivity to the allograft	Showed varying degrees of tolerance 38% died of wasting syndrome (GVH disease) later	No indication for being tolerant but the graft rejected faster than (A)	Showed impaired reactivity to the graft No GVH disease

ALL RATS OF ALL GROUPS HAD LEWIS SKIN ALLOGRAFTING AFTER WEANING

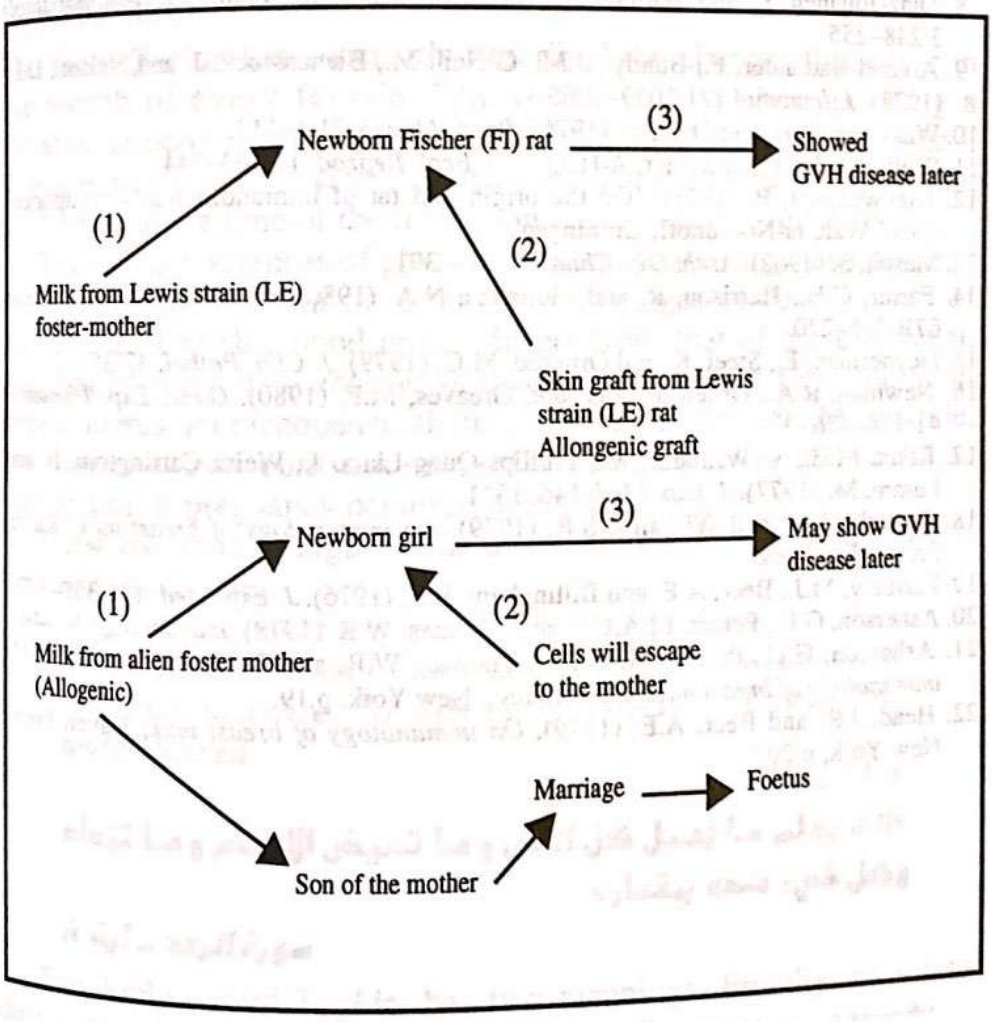


TABLE II.
ADAPTATION OF THE RATS MODEL IN HUMAN SYSTEM

REFERENCES

1. Bargmann, W. and Welch, V. (1969). In 'Lactogenesis: the initiation of milk secretion at parturition' (Reynolds, M., Follays, S.J., eds.) pp.43–52, Univ. Pennysylvania Assoc. Philadelphia.
2. Bargmann, W., Fleischawer, K. (1961); and Knoop, A. (1961). *Z. Zellforsch.* 53:545–563.
3. Feldman, J.D. (1961). *Lab. Invest.* 10:238–255.
4. Keenan, T.W., Morre, D.J., Olson, D.E., Yunghans, W.N. and Patton, S. (1970). *J. Cell Biol.* 44:80–93.
5. Patton, S. and Trans, E.C. (1971). FEBS Letters, 14:230–232.
6. Beer, A.E., Billingham, R.E. and Head, J. (1974). *J. Invest. Dermatol.* 63:65–74.
7. Orga, S.S. and Orga, P.L. (1978). *J. Pediatr.* 92:550–555.
8. Diaz-Jouanen, E. and Williams, R.C., Jr. (1974). *Clinc. Immunol. Immunopathol.* 3:248–255.
9. Arnaud-Battander, F., Bundy, B.M., O'Neil, M., Bienenstock, J. and Nelson, D.L. (1978). *J. Immunol* 121:1059–1065.
10. Waksman, B.H. and Ozer, H. (1976). *Prog. Allergy* 21:1–113.
11. Seeling, L.L., Jr., and Beer, A.H. (1978). *Brol. Reprod.* 17:763–744.
12. Nieuwenhuis, P. (1971). 'On the origin and fat of immunologically component cells.' Walters-Noordhoff, Groningen.
13. Mason, S. (1962). *Arch. Dis. Child.* 34:387–391.
14. Farrar, G.H., Harrison, R. and Mohanna, N.A. (1980). *Comp. Biochem. Physiol.* 67B:265–270.
15. Heyderman, E., Steel, K. and Ornerod, M.G. (1979). *J. Clin. Pathol.* 32:35.
16. Newman, R.A., Ornerod, M.G. and Greaves, M.F. (1980). *Clinc. Exp. Immunol.* 41:478–486.
17. Roux, M.E., McWilliams, M., Phillips-Quag-Liata, J., Weisz-Carringtom, P. and Lamm, M. (1977). *J. Exp. Med.* 146, 1311.
18. Parmely, M.J. and Williams, S.B. (1979). *On immunology of breast milk;* Raven Press, New York.
19. Parmely, M.J., Beer, A.E. and Billingham, R.E. (1976). *J. Exp. Med.* 144:358–370.
20. Asherson, G.L., Perera, M.A.C.C. and Thomas, W.R. (1978). *Immunology* 36:449.
21. Asherson, G.L., Perera, M.A.C.C., Thomas, W.R. and Zembala, M. (1979). *On immunology of breast milk;* Raven Press, New York, p.19.
22. Head, J.R. and Beer, A.E. (1979), *On immunology of breast milk;* Raven Press, New York, p.207.

CHAPTER THIRTEEN

THE UTERINE CYCLE AS DESCRIBED IN THE *HOLY QUR'AN*

Introduction

The *Holy Qur'an* has succinctly described the changes that occur in the womb of every female. The womb is described as being a dynamic structure that undergoes continuous changes, which make it increase or decrease in size and structure. These uterine changes were not known at the time of the revelation – i.e., fourteen centuries ago.

The modern sciences of physiology and gynaecology also describe the uterine changes that occur at different stages of development of the female. The childhood uterus differs from that of the pubescent, and that of the pubescent shows marked differences from the adult female uterus. At menopause, there is yet another change. Meanwhile, the uterus shows continuous cyclic changes from menarche to menopause. If pregnancy occurs, a major change then occurs.

These dynamic changes of the uterus are clearly described by one Qur'anic *aya* [verse]:

> *'God knows what any female bears. He knows well to what extent the wombs may decrease and to what extent they may increase. To Him everything is well measured and balanced.'*
>
> *Sura 13:8*

«الله يعلم ما تحمل كل انثى وما تغيض الارحام وما تزداد
وكل شيء عنده بمقدار»

سورة الرعد - آية ٨

The Arabic word *Taghiz* has two meanings; literally, one is to decrease or diminish, the other is to hide or disappear – تغـــور - The second meaning will be discussed elsewhere. The first meaning will be discussed here.

Dynamic changes

In the time of the Prophet Muhammad (PBUH) – AD 570-632 – no one was aware that the uterus [womb] undergoes continuous dynamic changes. These continuous changes are not limited to the child-bearing years, but extend to involve the changes that occur in the uterus of the infant, the child, the adolescent, the adult, the menopausal and post-menopausal female.

The uterus undergoes remarkable changes during the menstrual cycle. At the beginning of the cycle, the endometrium is less than 1mm thick (usually 0.5mm); most of it has been sloughed off during menstruation. In the proliferative phase, under the effect of oestrogen, the endometrium grows and proliferates. The glands proliferate, the blood vessels invade the endometrium, and the epithelial cells proliferate and become pseudo-stratified. The myoterium also increases, and its contractions become strong but erratic.

During the secretory (leuteal) phase, the uterus – under the effect of progesterone – shows a tremendous increase in growth and coiling of the superficial arteries, in preparation for the increased blood supply necessary to the implanting blastocyst. The uterine glands, similarly, become tortuous and very active in secreting what is known as uterine milk. The thickness of the endometrium reaches 7mm at the end of this stage.

The spongy layers of the endometrium were, strangely, described by Ibn Al Qaim seven centuries ago: 'The inside of the uterus is rough like a sponge.'

«ان داخل الرحم خشن كالاسفنج وجعل فيه قبول للمنى كقبول الأرض العطش للماء»

التبيان في اقسام القرآن

If pregnancy does not occur, the sudden withdrawal of the progesterone causes spasms of the coiled uterine arteries. The ischaemia causes sloughing of the endometrium, and bleeding from the coiled uterine vessels. This is menstruation. The endometrium returns to its level at the beginning of the cycle.

The cyclic changes of the uterine endometrium were first recognized by Hitchman and Adler in 1908.

From menarche (beginning of menstruation), usually at the age of twelve, until the menopause, usually around fifty, the female goes into continuous cycles month after month – unless pregnancy occurs. If this happens, the greatest change occurs – the uterus grows remarkably from a small organ weighing 50gm, to a huge organ that fills the whole abdomen and whose weight is 1000gm. Its capacity is multiplied more than 400 times.

All the components of the uterus take part in the growth process. The muscle fibres show both hypertrophy, i.e., growth, and hyperplasia, i.e., cellular multiplication. The individual muscle fibre increases from 50μ to 500μ. Similarly, the connective tissue, the blood supply, and the endometrium show remarkable changes during pregnancy.

After delivery, the uterus gradually returns to its norm – taking about six weeks to revert to its state prior to pregnancy.

Immediately after delivery, the uterus loses 100gm of its weight; its level comes down to the level of the umbilicus. One week after delivery, the uterus reaches midway between the umbilicus and the pubes, and its weight is halved (i.e., 500gm). On the tenth day, the uterus is just above the pubes, and by the end of the second week it is not palpable from the abdomen. Its weight by then is 250gm. By the sixth week, the uterus is back to its previous stage, except that it is a little bit larger.

The involution of the pregnant uterus is associated with a reversal of the hypertrophic changes which occurred during pregnancy, and the enlarged vessels undergo a peculiar form of hyaline degeneration.

These cyclic changes of the womb are described – very elegantly, and very precisely – by the *Holy Qur'an:*

'God Knows what any female bears. He knows well to what extent the wombs may decrease and to what extent they may increase. To Him everything is well measured and balanced.'
Sura 13:8

«الله يعلم ما تحمل كل انثى وما تغيض الارحام وما تزداد
وكل شيء عنده بمقدار»

سورة الرعد - آية ٨

Truly, everything to him is well measured and balanced. Blessed is God, the best of artisans.

CHAPTER FOURTEEN

MENSTRUATION IS A VULNERABLE PERIOD

'And they will ask thee about [women's] menses. Say it is a vulnerable condition. Keep therefore aloof from women during their menstrual period, and do not draw near them until they are cleansed. When they are clean and pure you can contact them but only from the place God has bidden you to do so. Verily, God loves those who turn unto Him in repentance and He loves those who keep themselves pure and clean.'

'Your wives are your tilth, go then unto your tilth as you may desire, but first make some introduction [to the sexual act]. Remain conscious of God and know that you are destined to meet Him. And give glad tidings unto those who believe.'

Sura I/222-223

«نساؤكم حَرث لكم فاتوا حَرثكم انى شئتم وقدموا لأنفسكم واتقوا الله واعلموا انكم ملقوه وبشر المؤمنين»
سورة البقرة ـ آية ٢٢٣

These *ayas,* along with the Prophet's sayings and acts with his wives, give a great illustration of how Islam considers sex, in contra-distinction to Biblical teachings.

First: the *Qur'an* teaches us that the menstrual period is a vulnerable condition for women, and therefore sexual contact should be avoided during this time. Also, the Prophet orders the believers to distinguish themselves from Jews, who consider a menstruating woman as filthy and that even touching her will cause man to be filthy for seven days. The Prophet himself kissed his wives during

their menstrual period, and allowed everying except intercourse. He himself slept with his wife Om Salamah in one blanket when she was menstruating (but, of course, without sexual intercourse).

Second, the *Qur'an* allows, and even encourages, sexual contact between a husband and wife provided that:

1. the woman is not menstruating;
2. the act is in the proper place, i.e. in the vagina and not ano-genital sex.

Clearly, God himself, in the *Qur'an* explains this [the *ayat* above]. The Prophet declared it to be an anathema to perform ano-genital sex. How to perform sex and in what position is left to the couple to decide, provided they avoid ano-genital sex and menstruation.

Third: the *Qur'an* and the *Hadith* clearly explain that man should not approach his wife like an ass does, but he should make some prologue or introduction in the form of talk and kiss before the sexual act is performed. If we consider how sex is abhorred and intimidated in Christianity, we find Islam – in contrast – very tolerant, indeed very enthusiastic, for a healthy and clean sexual life. The Prophet himself declared several times to his followers that celibacy is against the teachings of Islam, and those who perform it are undertaking an anathema. The Prophet said 'No celibacy is allowed in Islam.'

A vulnerable period for women

The *Holy Qur'an* clearly states that menstruation is a condition that makes females vulnerable It does not consider them filthy during this period, contrary to the *Old Testament*. Though it allows the husband to have various contacts with his wife during menstruation, it proscribes actual sexual acts. The menstrual period varies from woman to woman (usually 5 to 7 days) and the amount also varies from 70ml to 240ml. During menstruation, the outer two-thirds of the endometrium is sloughed off and shed. Five types of bleeding have been observed:

i. arterial with formation of minute haematoma;
ii. arterial with haematoma;
iii. venous bleeding;
iv. diapedesis;
v. secondary bleeding from previously ruptured poorly thrombosed vessels.

Menstruation is associated with systemic changes. The temperature falls by one degree. The BMR (Basal Metabolic Rate) is at its lowest. The secretions of the thyroid and suprarenal glands are at their ebb. The menstruating woman is emotionally unbalanced and may

complain of headaches. This is why Islam denounces the act of divorce at a time of menstruation and considers it a sinful act. Muscle sensitivity and hypertonicity are usually associated with irritability and agitation. There are vascular alterations during menses, including pelvic hyperaemia and increased capillary fragility, or a tendency towards bruising. Mastalgia (breast sensitivity and pain) is also noted in many females during menses.

Iron deficiency is a common sequel of menstruation, especially if the menses are heavy and prolonged. Dysmenorrhoea is quite a common symptom. Most women dislike sex during menstruation, especially at its start.

Blood is a very good environment for the growth of bacteria. The gonococcus is notorious for its voracity and dissemination during menstruation: 'Gonocci disseminate most often during menstruation, a time when these organisms are exposed to increased amounts of free iron.'* There is an increased virulence of many organisms exposed to iron.

The denuded surface of the endometrium provides an easy target for the micro-organisms. The protective acid secretions of the vagina due to the acidogenic gram positive rods (*Doderlein's bacilli*) are lost during menstruation. Also, the thickness of the vaginal endothelium decreases during menstruation. Similarly, the protective secretions of the cervix are lost. These factors make the introduction of the penis inside the vagina a process fraught with many dangers.

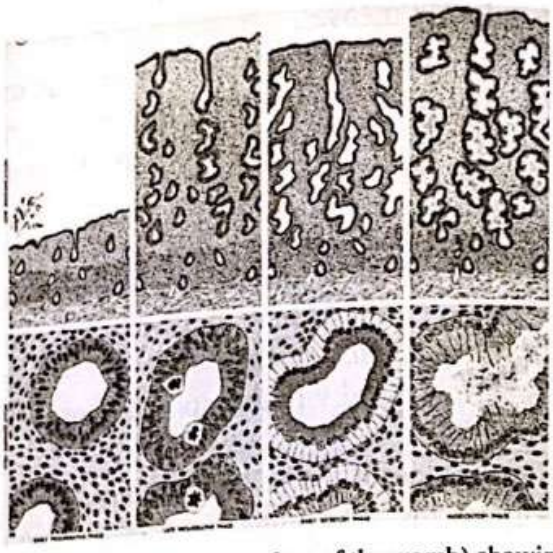
The local factors and the general debility that accompany menstruation makes the body defence system at its lowest. The introduction of micro-organisms in such a state increases the possibility of infection of the genital system, and its spread. Inflammation of the uterine tubes is one of the sequelae of having sex during menses. This may result in sterility. Spread of infection to the neighbouring urethra and bladder is not uncommon.

Prof. Basalamah, in his paper to the Sixth Saudi Medical Conference, suggested that sex during menses may be a factor in causing cervical carcinoma. Further proof is still needed.

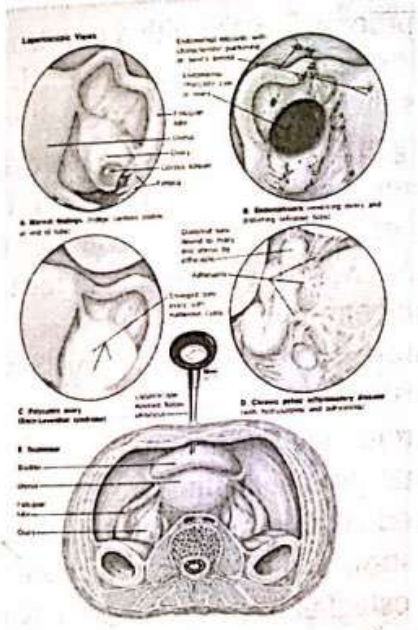
It was found that prostaglandins are increased during menstruation. Menstrual blood contains an increased amount of prostaglandins. This causes congestion of the pelvis, which may be responsible for dysmenorrhoea. Prostaglandins cause the cervical *os* to dilate which allows semen and bacteria to enter into the uterine cavity. Semen also

*Mandelle, Douglas & Bennet, *Principles and practice of infectious diseases*; p.19.

contains an increased amount of prostaglandins. During sexual intercourse, there is an increase of uterine contractions, which during menstruation may result in endometriosis. Endometriosis is associated with abdominal pains during the time of menstruation and increased incidence of sterility.



The endometrium (the inside surface of the womb) showing the process of menstruation in which most of the endometrium is sloughed and disintegrated. It is then rebuilt for a new cycle



Sex during menstruation may end in implanting of endometrial tissue in abdominal cavity; a process called endometriosis, which can cause infertility and severe abdominal pains

CHAPTER FIFTEEN

WHEN IS THE SOUL INSPIRED?

Introduction

This is a very difficult subject to tackle. Muslim scholars have differed in their definition and understanding of the soul. However, it is imperative to discuss here the entry of the soul into the forming foetus. The *Qur'an* and *Hadith* have both mentioned this in many verses *(ayas)* and many *Hadiths*. The *ulema*, 'the learned of the Muslim nation', have for many centuries discussed it in detail.

A practical, pragmatic issue emerges by discerning the time of entry of the soul. Many Islamic jurists allow abortion, provided there are medical reasons, before the time the soul enters the body. All of them refute abortion or miscarriage after the entry of the soul into the forming body, except in one situation only – if the life of the mother is endangered. Otherwise, all jurists refuse to allow abortion after the entry of the soul, even if the foetus is grossly malformed or suffering from congenital or inborn errors of metabolism.

An open neural tube with an anencephaly spina bifida, a hydrocephaly, renal agenesis (absent kidneys), or gross congenital heart abnormalities, whenever diagnosed after the time of the soul's entry to the body, are no excuse for performing abortion or miscarriage.

For this reason, it is important to study this obscure and difficult subject.

The *Holy Qur'an* speaks of *Rooh* [soul], in many *ayas*. At least four meanings were given by the commentators[1] in the *Qur'an:*

1. the soul which breathes life into human beings
2. the angel Gabriel

3. the *Qur'an*
4. another angel

The first meaning will be discussed here. The stage at which the soul is breathed into the forming body within the womb occurs after it has passed through the *Nutfa*, the *Alaka*, the *Modgha*, bone formation and flesh formation (that covers the bones stages).

'We created man from the quintessence of mud. Thereafter we cause him to remain as a drop of fluid (Nufta) in a firm lodging [the womb]. Thereafter we fashioned the Nufta into something that clings (Alaka), which We fashioned into a chewed lump (Modgha). The chewed lump is fashioned into bones which are then covered with flesh. Then We nurse him unto another act of creation. Blessed is God, the best of artisans.'

Sura 23/12–14

«ولقد خلقنا الانسان من سلالة من طين. ثم جعلناه نطفة في قرار مكين ثم خلقنا النطفة علقة فخلقنا العلقة مضغة فخلقنا المضغة عظاما فكسونا العظام لحما. ثم انشاناه خلقا آخر فتبارك الله احسن الخالقين»

سورة المؤمنون - آية ١٢ - ١٤

The other 'act of creation' is explained by Ibn Jarir Al Tabri, Ibn Kathir and Al Fakhar Al Rhazi as being the breathing of the soul unto the forming body.

The Prophet Muhammad (PBUH) says:

'The creation of each one of you is collected in forty days: And something that clings *(Alaka)* he becomes and then a chewed lump *(Modgha)* for a similar time. The angel is sent to him and the angel writes four things: his provision [sustenance], his age, his deeds, and whether he will be wretched or blessed. Then the soul is breathed into him.'

Narrated by Muslim Kitab Al Qadar and Al Bukhari *(Kitab Al Qadar, Kitab Al Anbiya, Kitab Al Tawhid).*

To another *Hadith,* narrated by Huzaifa Ibn Osaid, the Prophet (PBUH) said:

'When the *Nufta* enters the womb and stays there for forty nights, God sends an angel to give it a form and creates its hearing, sight,

skin, bone and flesh. Then the angel asks. "O God is it a boy or a girl" and God determines whatever He decides. He then asks what is his livelihood and God determines.'

(Narrated by Muslim, *Kitab Al Qadar*).

There are many other expressions for the *Hadith* narrated by Abdulla Ibn Masood, quoted by Al Bukhari in *Kitab Al Qadar, Al Anbiya, Al Tawhid,* and Muslim in *Kitab Al Qadar.*

Some jurists understood that the *Nufta* is 40 days – the *Alaka* and *Modgha* are each forty days.[2] Others declared that the whole period of formation of *Nufta, Alaka,* and *Modgha* is forty days.[3] The majority of jurists tend to expand the period to 120 days (seventeen weeks and one day).

This may be suitable for the medical profession, as diagnosis of congenital abnormalities or severe inborn errors of metabolism can be diagnosed by amniocentesis at the fifteenth week. Similarly, ultrasound studies can be conducted earlier and can detect malformation at an early stage (before sixteen weeks).

So long as the foetus has not reached the hundred and twenty days, it is permissible – in the view of most jurists – to perform abortion if indicated medically. However, after the 120th day, abortion is not allowed unless the life of the mother is endangered.[4] Ibn Hazim[5] and Zahyria and Sheikh Al Booty are more stringent, and even then do not allow miscarriage.

The jurists who claim that the stages of *Nufta, Alaka,* and *Modgha* are all collected in forty days, do not specify when the soul is breathed into the forming body. They note that it is definitely after forty days, and after the formation of the organs of the body, including the sex organs.

Ibn Al Qaim argues as follows:[6]

'If it is asked: "Does the embryo before the breathing of the soul unto it, have perception and movement?" It is answered that the movement it possesses is like that of a growing plant. Its movements and perceptions are not voluntary. When the soul is breathed unto the body, the movements and perceptions become voluntary and are added to the vegetative type of life it had prior to the breathing of the soul.'

Ibn Hajar Al Asqalani propounds a similar argument when discussing which organs form first. 'The liver,' he says, 'is the site of nutrition, and growth is needed at that stage, not voluntary movement nor perception. These are acquired when the soul gets attached to the body.'

It is more than interesting to find the eminent Ibn Al Qaim and Ibn

Hajar Al Asqalani linking the soul or spirit being attached to the body by the appearance of voluntary movements.

The bone structure begins early – as the somites differentiate into sclerotomes (or forming the bones) and myotomes (forming the muscles), at the fifth week, and in the sixth week the limb buds appear. The muscles of the head, neck and trunk appear by the eighth week, while the perineal muscles appear by the tenth week. The first voluntary movements appear clearly at the twelfth week, though it may have started by the eighth week.

The pregnant mother starts feeling the kicking of her unborn child by the sixteenth week; though some mothers feel this a little earlier and some a little later. That is why the *idda* (i.e. the period which a widow should abstain from remarrying) is four months and ten days, in order to make sure whether or not she is pregnant. If she happens to be pregnant, the *idda* is prolonged until she delivers her baby.

The concept of Ibn Al Qaim and Ibn Hajar Al Asqalani, which links the breathing of soul to the appearance of voluntary movements is a remarkable one. It links human life to volition, and to the integration between muscle and nerve to produce a voluntary action.[7-8]

The nature of the soul

No one knows anything about the nature of the soul.

> *'And they will ask about the soul. Say the soul [cometh] by the Command of my Lord. O Men you have been granted very little knowledge.'*
>
> *Sura 17/85*

> «ويسالونك عن الروح قل الروح من امر ربي وما اوتيتم من العلم الا قليلا»
>
> سورة الاسراء ـ آية ٨٥

The commentators of the *Holy Qur'an,* like Ibn Kathir, Ibn Garir, Al Fakher Al Rhazi, Al Baghawi and Al Ghazin, all agreed that the word *Rooh* here means the soul. The other meaning of *Rooh,* like the divine inspiration (the *Qur'an)* or the angel Gabriel are not relevant here. However, both Yusif Ali and Mohammed Asad chose the meaning divine inspiration as a translation for the word *Rooh* in this *aya* [verse].

The *Rooh* here, and the coming *Qur'anic* verses, mean the soul which gives life to human bodies.

'When I have fashioned him [in due proportion] and breathed into him of My Spirit, fall you down before Him in prostration.'

Sura 38/72

«فاذا سويته ونفخت فيه من روحي فقعوا له ساجدين»
سورة ص ـ آية ٧٢

'He Who maketh most excellent everything that He creates. He began the creation of man with [nothing more than] clay. And made his progeny from quintessence of despised fluid. Then He fashioned him in due proportion and then breathed into him something of His Spirit.'

Sura 32/7–9

«الذي احسن كل شيء خلقه وبدأ خلق الانسان من طين ثم جعل نسله من سلالة من ماء مهين. ثم سواه ونفخ فيه من روحه. وجعل لكم السمع والابصار والافئدة قليلا ما تشكرون»
سورة السجدة ـ آية ٧ ـ ٩

The nature of the soul or spirit, no one knows of. All that man really knows is that when the soul or spirit is breathed in, he gets the human life (after a vegetative life of the *Nufta, Alaka* and *Modgha)* and when it departs, he is dead.

The signs of human life in the womb do not start at the time of fertilization as many physicians claim. This is a vegetative life, devoid of volition. Human life starts when muscles contract voluntarily in the dark environment of the womb and its membranes.

That, as Ibn Al Qaim says, is the beginning of human and not vegetative life.

Other signs may be the writings of the angel on the forehead of the infant. The Prophet (PBUH) says: 'And the angel writes all that he would face in between his eyes.' (narrated by Al Bazarr).

The *lanugo* which is found on the forehead of the infant, and the fingerprints which start during the third month, may be a pointer to this type of undeciphered writing.

REFERENCES

1. Ibn Garir Al Tabri, Ibn Kathir, Al Fakher Al Rhazi, Al Baghawi, Al Khazin, Al Qurtubi, Al Galalain: *Tafsir Surat Al Isra* 17/Verse 85.
2. Al Nawawi: *Shareh Shahih Muslim Kitab Al Qadar.*
3. Ibn Hajar Al Asqalani: *Fateh Albary Shareh Sahih al Bukhary, Kitab Al Qadar;* vol.ii, p.481. Ibn Al Qaim: *Atibian Fi Aqsam al Qur'an* – and quoted by Ibn Hajar in *Fateh Albary;* Ibn Abdeen: *Hashya*, vol.i:310.
4. *Fatawa Shaltoot and al Qardawi Al Halal Wal Haram*, p.194.
5. Ibn Hazim, *Al Mohala*, vol.ii, p.31.
6. Sheikh M.S.R. Al Booty: *Masalat Tahdid Annasel;* pp.100–107.
7. Ibn Al Qaim: *Al Tibian Fi Aqsam Al Qur'an*, p.255.
8. Ibn Hajar: *Fateh Albary, Kitab Al Qadar*; vol.ii:482.

CHAPTER SIXTEEN

SOME ASPECTS OF GYNAECOLOGY AS EXPRESSED IN THE *HOLY QUR'AN*

Firm Lodging

The Qur'anic *ayas* of *Sura 77/27–30* describe the womb as a 'firm lodging'. Reviewing the anatomical and physiological criteria, the Qur'anic description is certainly the most apt.

> *"Did We not create you from a humble fluid, which We lodge in a firm lodging [the womb] for a term pre-ordained. Thus We have determined. Blessed is Our Power.'*
>
> *Sura 77/20–22*

«الم نخلقكم من ماء مهين. فجعلناه في قرار مكين. الى قدر معلوم. فقدرنا فنعم القادرون»

سورة المرسلات ـ آية ٢٠ ـ ٢٣

> *'We created man from quintessence of mud. Thereafter We placed him as a drop of sperm in a firm lodging' – [i.e., womb].*
>
> *Sura 23/13*

«ولقد خلقنا الانسان من سلالة من طين. ثم جعلناه نطفة في قرار مكين»

سورة المؤمنون ـ آية ١٢ ـ ١٣

It is perhaps surprising to find the description of the womb as a 'firm lodging' – قرار مكين – yet it is both a very illustrative and accurate term. Its configuration is a paradox, in that it is seemingly complex yet basically simple.

As the womb [the uterus] is the site for the growing human embryo it is supported and protected by:

1. the bony pelvis
2. the pelvic floor
3. true and false ligaments of the uterus
4. the equilibrium between the pressure created in the abdomen and that of the pelvis
5. the support of the surrounding pelvic organs
6. the support of the uterus by the cervix
7. the role of the progesterone which diminishes the erratic contractions of the uterus.

The uterus is like a suspended bridge that can move while it is firmly tethered at its sides. During pregnancy the uterus not only moves, but grows immensely – from 50g to 1000g at term. Its capacity increases by 3500 times (from 2ml to 7000ml). Nevertheless, the support of the uterus is no less at term than at other times.

Briefly, the items which provide protection and support of the uterus are:

1. The Bony Pelvis

The bony pelvis is a basin-shaped structure composed of four bones: the right and left innominate bones anteriorly and laterally, the sacrum and the coccyx posteriorly. It rests on the femora and supports the spinal column.

The design of the pelvic bones form two cavities: the upper (larger and shallower) false pelvis; and the lower (smaller and deeper) true pelvis.

The flat, shallow, funnel-like false pelvis aids in supporting the intestines, which indirectly support the uterus. The uterus itself is well-protected within the true pelvis. A non-pregnant uterus is rarely affected by injury, even a stab wound. In any accident involving injury to the bony pelvis, the uterus is rarely harmed.

The posterior position of the true pelvis is three times deeper than its anterior segment, and the shape of the pelvic cavity along its axis suggests a bent tube with a considerably shortened anterior curve – thus forming a safe pathway for the baby during delivery.

2. The Pelvic Floor

The pelvic floor consists of muscles, ligaments and fascia arranged in such a manner as to provide:

a) support for the pelvic viscera, especially the uterus
b) sphincter-like action for the urethra, vagina and rectum

c) a passage for the infant at delivery.

It is composed of:

a) the *upper pelvic diaphragm* – which comprises the *levator ani* and *pubococcygeus* muscles, the *endopelvic fascia* and the *utero-sacral* ligaments;

b) the *lower pelvic diaphragm* or the *urogenital diaphragm,* which comprises the *levator ani*, *pubococcygeous* and *sphincter* muscles at the vulvar outlet;

c) the *recto-vaginal septa* which connect the two diaphragms;

d) the *perineal* body;

e) the *coccyx.*

Accessory structures include the *transverse cervical ligament* and the *gluteus maximus* muscles.

The upper and lower pelvic diaphragms anchor into the perineal body directly or indirectly like spokes into the hub of a wheel. The layers of the pelvic diaphragms are interwoven and superimposed to provide reciprocal support. They are not fixed, but move upon one another – providing resistance, strength and elasticity, making it possible for the birth canal to dilate during the passage of the foetus at delivery, and to close after its passage at post-partum.

The pelvic floor is perforated centrally by the urethra, vagina and rectum, each of which traverses the pelvic floor at an angle, thus enhancing the sphincter-like action of the *levator ani* and *pubococcygeus* muscles.

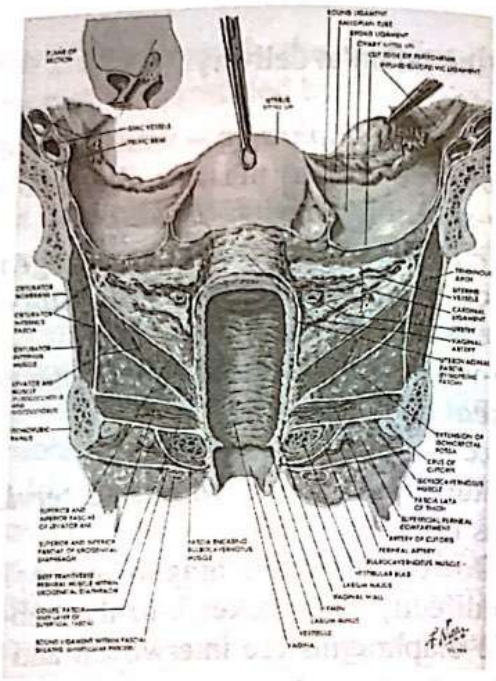
The tissues of the musculo-fascial diaphragm provide resistance and support for the uterus and other pelvic organs. This does, indeed, really make the uterus a 'firm lodging' for the growing embryo and foetus. Truly, there can be no better term than the Qur'anic term – قرار مكين – 'a firm lodging'.

3. True and false ligaments of the uterus

The fibromuscular (true) ligaments play a primary role in supporting the uterus while the false ligaments (peritoneal folds) provide a secondary role.

The uterine ligaments (true) are made of fibrous condensations of pelvic fascia containing muscle fibres, and in the vicinity of the uterus they blend with its musculature. They hypertrophy in pregnancy to provide support for the fast-growing uterus, and involute at parturition, when the uterus is also involuting.

The ligaments sling the cervix with the upper part of the vagina from the pelvic floor. The cervix, therefore, is the most fixed part of the uterus. These ligaments are:



a) the round ligaments, which connect the uterine body to the anterior abdominal wall and the *labium majus*;
b) pubo-cervical ligaments, connecting the *cervix* to the *pubis*;
c) the lateral or transverse cervical or cardinal ligaments, connecting the lateral aspect of the cervix and upper vagina to the side wall of the pelvis;
d) the utero-sacral ligaments, connecting the *cervix* to the *sacrum*.

The false ligaments are peritoneal folds that connect the uterus with the pelvic wall. The broad ligaments are wide peritoneal folds that sweep laterally from each side of the uterus to the pelvic walls. They contain the fascia, blood vessels and nerves that supply the uterus.

4. The intra-abdominal pressure:

Tends to push the pelvic viscera downwards. This is balanced by the pressure inside the pelvis, which helps to maintain the pelvic viscera in its place. The pelvic organs support each other in a similar way.

5. The cervix of the uterus:

Is the fixed part of the uterus, to which most of the ligaments are attached. This allows the body of the uterus to grow and move while it is fixed from its neck.

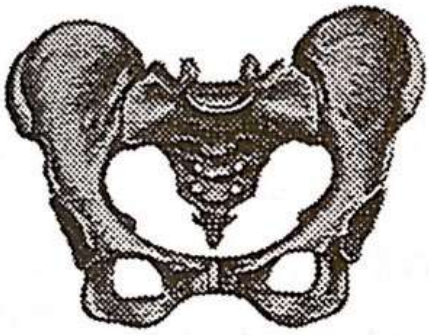
6. The uterine contractions:

At the proliferative phase are increased under the influence of oestro-

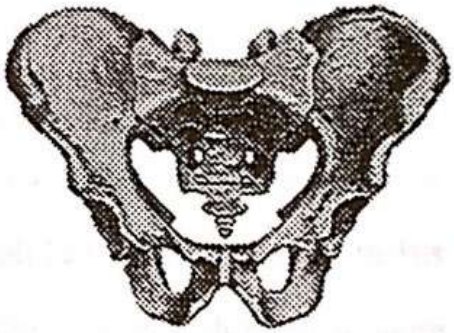
gen. The contractions are rather erratic and strong. At the leuteal (secretory) phase, the uterine contractions are much slower and more rhythmic, due to the effect of progesterone.

When pregnancy occurs, progesterone secretion increases and the uterine contractions become slower. This gives the *blastocysts* a better chance to adhere and implant in the richly-vascular endometrium provided by the progesterone effect.

These, then, are the major factors that contribute to the uterus as a firm lodging for the embryo and foetus. Truly, there can be no better term than the Qur'anic term – 'a firm lodging'.

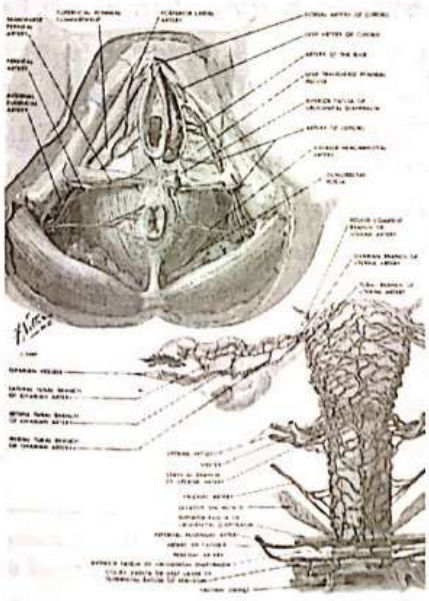


A. The female pelvis



B. The male pelvis

The female pelvis is wider, shallower and broader than the male plevis, in order to accommodate the growing infant, and to facilitate its delivery



CHAPTER SEVENTEEN

ISLAMIC VIEW ON THE HUMAN CORPSE*

The human being is considered in Islam as the Viceregent of God (Allah) on earth. 'Behold, thy lord said to the angels: I will create a viceregent on earth.'[1]

Man was created by Allah through being breathed into with His Spirit.

'He [i.e., Allah] began the creation of man with [nothing more than] clay; and made his progeny from a quintessence of the nature of a fluid despised [i.e., semen]. But He fashioned him in due proportion and breathed into him something of His Spirit.'[2]

'Behold, thy lord said to the angels: I am about to create man from clay. When I have fashioned him [in due proportion] and breathed into him of My Spirit, fall ye down in obeisance unto him.'[3]

Man is considered the most honoured creature of Allah on earth. Even the angels were ordered to bow to him in veneration, the moment Allah created Adam. Not only Adam was honoured by Allah but his progeny also, provided they trod on the right path.

'We have honoured the children of Adam; provided them with transport on land and sea; given them for sustenance things good and pure; and conferred on them special favours, above a great part of our creation.'[4]

Human life begins at the time of ensoulment, which is stated in one of the sayings (*Hadith*) of the Prophet Muhammad (PBUH) as to be the 120th day from the moment of conception.[5] Prior to that moment, the embryo has a sanctity but not reaching that of a full human being.

* Co-author: Dr Nabeel Nizamuddin, MB, BS, FRCS (ed.), Consultant-in-Charge Renal Transplant Programme, and Consultant Surgeon, King abdul Aziz General Hospital, Jeddah.

The life ends with the departure of the soul (or spirit), a process which cannot be identified by humans except by the accompanying signs, the most important of which are the cessation of respiration and of circulation.

For ages, humanity depended on these signs for declaration of death. However, with the vast advances in medical technology in the last three decades, the concept of Brain Death was accepted under certain conditions. After a period of dispute and litigations, the concept of brain death gained ground all over the world. It is of interest to see how quickly the Muslim religious leaders responded to this new concept. The jurists of the Muslim world held many conferences to discuss and deliberate on this issue. The most important of these was the Third Conference of the Islamic Jurists held in Amman, Jordan, on 11–16 October 1986 – which acknowledged brain death as equal to 'cardiac' death.[6] The declaration of death and issuing of death certificates is considered the responsibility of the treating physician and the health authorities.

The issue of Brain Absent, as adopted by Harrison and others[17] for congenitally anomalous foetuses of anencephalics is still under discussion by the Muslim Jurists.

Once death is declared by the physician, the property of the deceased is inherited by the heirs, which should be divided according to Islamic (*shari'ah*) law. The wife abstains from remarriage for a certain period – called *Idda* – unless she is pregnant, when this period ends by delivery.

Should the diagnosis of brain death be established unequivocally, the physician in charge may keep the corpse ventilated for the purpose of pre-arranged organ donation until the consent of the heirs is received, or until an order from the magistrate (*Qadi*) in the case of an unknown corpse. The ventilated corpse is considered dead from the time of declaration of brain death and not from the time the ventilator is turned off.

The sanctity of the human body is however not lessened by the departure of the soul and declaration of death. The human body, whether living or dead, should be venerated likewise.

The Prophet Muhammed (PBUH) rebuked a man who broke a bone of a deceased, which he found in a cemetery. The Prophet said, 'the guilt of breaking the bones of a dead man is equal to the guilt of breaking the bones of living man'.[7,8]

The dead body should be washed and prepared for burial as soon as possible, in order to avoid putrefaction, which occurs rapidly in hot climates, and this is an order by the Prophet. Due respect and rever-

ence should be given to the funeral. Any bystander should stand up in veneration for the funeral passing by, even if it belonged to a non-Muslim, or an enemy. The Prophet Himself stood in veneration for the passing funeral of a Jew, at a time when Jews were his bitter enemies. One of the Prophet's companions said 'It is the funeral of a Jew' and the Prophet answered, 'Is it not a human soul?'[9]

The expense of the funeral and burial should be sponsored by the society or the Muslim government if the deceased is poor. Cremation is not allowed in Muslim communities. Post-mortems/autopsies are also not allowed, except for:

1. Coroner cases, where the cause of death is suspicious. An order from the Magistrate (*Qadi*) should be provided for autopsy.
2. For the diagnosis of difficult cases, where this was not possible during the lifetime of the deceased, and where the diagnosis would help the community at large. The heirs, or the next of kin, should agree in writing to post-mortem procedures. In Islamic law (Shariah), the spouse is not considered as the next of kin for such purposes.
3. For the purpose of teaching anatomy and pathology, Islam encouraged Muslims to study medicine and since this cannot be done unless anatomy and pathology are studied, the Muslim jurists allowed dissection of human bodies and autopsy, provi-ded the relatives' consent is obtained. Muslim jurists allowed organ donation for the purpose of transplantation both from living donors and from the corpses.[10–16] However, donations from the living should not cause any harm to the donor, and he should be capable of freely giving his full consent.

Donations from corpses is also permitted, provided the deceased had agreed in his lifetime to such a procedure, or the next of kin agrees, in the absence of prior consent. In unidentified corpses, the Muslim *Qadi*, or Governor, can issue a decree allowing organ donation.

The selling of human organs is forbidden in Islam, as it is considered an anathema.

For a legal definition of the Islamic next of kin refer to Dr. I. Ghanem's article in *Medicine, Science and the Law* (1988) vol. 28, No.3, pp.241/242. Dr. Ghanem suggests that the answer lies in the degrees of relationship for the purposes of legal deputization or representation. He opined that most schools of Islamic law are agreed that an incapacitated relative (e.g., in coma) may be represented by the following relatives in order of priority:

1. father, son, mother;
2. Siblings, wife, grandfather and grandson;
3. paternal and maternal uncles; and
4. cousins

He points out that the pre-Islamic position of blood guardians was:

1. son and descendants;
2. father and ascendants;
3. brothers and nephews, and
4. uncles and cousins.

So although a wife is the next of kin in the West, she is not the Islamic next of kin for the purpose of an autopsy.

REFERENCES

1. *Holy Qur'an:* Sura 2, Aya 30.
2. *Holy Qur'an*: Sura 32, Aya 6–9.
3. *Holy Qur'an*: Sura 38, Ayas 71, 72.
4. *Holy Qur'an*: Sura 17, Aya 70.
5. Ibn Masoud, *Sahih Bukhari* 6:220; *Sahih Muslim* 2643.
6. Decree No.5, Third Conference of Islamic Jurists, Amman 11–16 October 1986. *Fiqh Academy Book of Decrees*, Jeddah 1988:34.
7. Abu Dawud, *Sunan Abi Daw'ud, Dar Al Hadith*, Homs, Syria (nd). vol.3:312, 213.
8. Ahmed Ibn Hanbal, *Musnad Ahmed*. Dar Al Maarif, Cairo; Comment by Ahmed Shakir; vol.6:58.
9. Narrated by five of the six most authentic books of Hadith: Sayings and Practice of the Prophet Muhammad – viz. *Sahih Bukhari, Sahih Muslim, Sunan Abi Daw'ud, Sunan Al Nasaii,* and *Sunan Ibn Maja.*
10. Fatwa (judicial decree) of Sheikh Hasan Ma'moon (Grand Mufti of Egypt – i.e., grand jurist), No.1087 dated 14 April 1959.
11. Fatwa of Sheikh Ahmed Heridi (Mufti of Egypt), No.993 dated 23 October 1966.
12. Fatwa of Sheikh Khatir (Mufti of Egypt) No.1069 dated 3 February 1973.
13. Fatwa of Ministry of Islamic Affairs, Kuwait, No.132/79 dated 24 December 1979.
14. Fatwa of Grand Jurists of the Kingdom of Saudi Arabia, No.99 dated 6 November 1402H (1982).
15. Decree No.5, Third Conference of the Islamic Jurists, Amman 11–16 October 1986. *Fiqh Academy Book of Decrees*, Jeddah 1988:34.
16. Decree No.1, Fourth Conference of Islamic Jurists, Jeddah 6–11 February 1988. *Fiqh Academy Book of Decrees*, Jeddah 1988:55–58.
17. Harrison, M.R., *Lancet* 1986; 13:1383–1385.

CHAPTER EIGHTEEN

CONTRACEPTION AND ABORTION AN ISLAMIC VIEW

Abstract

Although procreation is considered as the most important function of marriage, millions of women use some means of contraception and even resort to abortion. Medical reasons constitute only a small proportion of the actual number of cases, the rest being for social and other reasons.

Islam encourages limitless procreation within wedlock; nevertheless, it does not ban the use of temporary means of contraception. The use of permanent means of contraception is not allowed unless pregnancy would pose a threat to the health or life of the expectant mother. Similarly, abortion is not allowed unless the life or health of the expectant mother is at real risk.

Serious congenital anomalies of the foetus may be considered as an excuse to perform an abortion, provided it is practised in the first forty days of pregnancy. A more lenient view would extend it to the first 120 days of pregnancy, computed from the time of fertilization.

Here we discuss the different viewpoints of Islamic jurists and compare them with the actual practice in Muslim countries.

Islam, Christianity and Judaism look to procreation as an integral part of marriage. God said to both Adam and Eve: 'Be fruitful and increase in number, fill the earth and subdue it.'[1]

The Catholic Church holds the most conservative and stringent viewpoint against any means of contraception, except the physiological regulation of the menstrual cycle and abstention from sex during

the time of ovulation. The Protestants and most other Churches allow all means of contraception, including first trimester abortion.

In Islam, procreation is not only an integral part of matrimony, it is as an act of worship, as it fulfils God's orders of multiplying and filling the earth with good offspring. The *Holy Qur'an* proclaims:

'O Mankind! be conscious of your Sustainer, who has created you out of one living entity, and out of it created its mate, and of the two spread abroad a multitude of men and women.'[2]

'And God has given you mates of your own kind, and has given through your mates children and grandchildren.'[3]

The Prophet Muhammad (PBUH) said to all Muslims:

'Get married, beget and multiply, because I will be proud of you among all nations.'[4]

He also said:

'O Men, marry the kind and fertile, for I will be proud of your numbers among other nations.'[5]

Though Islamic teachings encouraged procreation within matrimonial bondage, it did not altogether prevent the use of contraception. At the time of the Prophet (PBUH), one of his companions called Abu Saeed AlKhoderi (may God be pleased with him) asked the Prophet about *aazel,* i.e. coitus interruptus. The Prophet said: 'It is not forbidden that you effect *aazel.* But whatever a soul that would be created by God, will be created until doomsday.'[6,7]

Another companion of the Prophet told him that he was practising *aazel.* The Prophet then said: 'Practise whatever you may wish, but she will get whatever is ordained for her by God.' The man came back after a while to tell the Prophet that his wife had become pregnant. The Prophet then said: 'Didn't I tell you that she will get whatever is destined for her by God?'[8–10]

The four schools of Islamic Sunni jurisprudence – i.e. Maliki, Hanbali, Hanafi and Sha'afi – all allow *aazel.* The Hanbali and Maliki schools indicate that the wife should agree to *aazel,* because she has a right in procreation.

The Islamic jurists would divide the contemporary means of contraception into three categories, viz:

1. Permanent type of contraception

There are some drastic means which cause permanent contraception, e.g., hysterectomy, ovarectomy, orchidectomy. Such methods are never resorted to for the sole sake of contraception nowadays. They are usually practised for ailments and serious disease of such organs.

Tubal ligation is often practised in multiparous women who may

be suffering from diabetes, renal disease or hypertension. Sometimes vasectomy is practised on the husband, instead of ligation of the uterine tubes of the wife. Indira Ghandi of India ordered the compulsory vasectomy of males in order to curb population inflation in India.

Vasectomy is generally disliked by the male spouse, especially in Muslim countries. It is rarely practised as a means of permanent contraception except in dire circumstances, where there is a serious disease threatening the life or health of the individual.[11]

Vasectomies are not allowed by Muslim jurists. Tubal ligation should not be resorted to in multiparous women who have had one, or even two, caesarians unless the dangers of conception are high.

2. Temporary means of contraception

These include a wide variety of ways and means, ranging from the physiological safe period and coitus interruptus, to mechanical means such as condoms or diaphragm, chemical agents such as spermicides, hormonal means such as contraceptive pills, and intrauterine devices whose mode of action is not well known.

The physiological safe period seems to be the most acceptable by the three cardinal religions, viz. Islam, Christianity and Judaism.

Onanism (coitus interruptus or *aazel)* is allowed in Islam but not much appreciated in Catholic circles. Onan, the grandson of Jacob, was probably the first man to use this method. He spilled his seed on the ground to keep from producing offspring for his deceased brother when he married his wife Tamar.[12]

The mechanical means pose no problem in Islamic jurisprudence. Similarly, the 'pill' is allowed, except where it may cause harm. The judicial use of the pill is called for, as in some cases it is contra-indicated. But, unfortunately, the pill is sold over the counter without prescription in most, if not all, Islamic countries.

Most, if not all, Islamic governments encourage the use of the pill and distribute it at nominal prices. This policy is repudiated by Islam – it acts against the Islamic theme of procreation and increasing the number of Muslims in the world.

Intrauterine devices – IUD – pose another problem. The mode of action is not clearly known. It is thought that it may act by preventing implantation of the blastula. If such is the case, then it is considered as a type of early abortion, which is not allowed by many Islamic jurists – e.g. Maliki school.[13]

Post-coital means, whether hormonal or prostaglandins, act by preventing implantation and nidation and hence will be included in this category.

3. Abortion

Abortion is sometimes used as a means of contraception. This is quite contrary to the aims of contraception. Abortion is practised widely nowadays for non-medical reasons – at least fifty million abortions are carried out annually worldwide. In France and Japan, half of all pregnancies end in abortion, whether carried out legally or illegally.[14] In South Korea, abortion is responsible for 33 per cent of the decline in the birth rate.[15]

The former Soviet Union was the first country to legalize abortion on demand, in 1920. It was subsequently banned from 1936 until 1955, when it was legalized for the second time.[14]

The UK legalized abortion on demand in the first trimester, in 1967; many other countries followed suit. The USA legalized abortion on demand in 1973, resulting in 1.5 million abortions annually – one-third of these are carried out on teenagers from 12 to 17 years. Japan performs 2–3 million abortions every year.[14,15]

Even in Catholic countries, where abortion is not legalized as yet, the number of abortions is high. In the Iberian peninsula it is estimated at one million annually. Similarly, in Latin American countries, the rate of abortion is very high indeed.

There are no available statistics of abortion cases carried out in Muslim countries. However, it seems to be low in comparison with other non-Muslim countries.

All Muslim countries, with the exception of Tunisia, hold abortions carried out for non-medical reasons to be criminal acts.[16] Muslim jurists do not allow abortion unless the life or health of the mother is seriously threatened. The opinion of three consultant physicians is mandatory prior to carrying out an abortion. Congenital anomalies, if detected early in pregnancy, may be considered as a good reason for allowing abortion by some jurists.[17,18*] Detection can be achieved by a Chorion-Villus biopsy at 7–8 weeks.

However, all Muslim jurists agree that miscarriage will not be allowed if the age of the foetus is 120 days or more (computed from the start of conception, i.e. fertilization)[17] as it is considered the time of ensoulment. Some jurists would not allow termination of pregnancy after 40 days from conception, for whatever the reason, unless the life of the mother is seriously threatened.[17] Nevertheless, many jurists *would* allow abortion in cases of rape during the first 40 days, com-

* The Muslim World League Conference of Jurists held in Makkah Alkuramah, 12th session, 10–17 February 1990, allowed induction of abortion of a seriously malformed foetus if decided by two or more competent specialized physicians, and provided it is performed prior to the 120 days computed from the moment of conception.

puted from fertilization time.[19,20] More stringent jurists – e.g., Al Ghazali and Imam Malik – would not allow abortion at any time after conception unless the life of the mother is seriously threatened.[19,20]

Modern medical technology, such as ultrasonography, amniocentesis and chorionic villi biopsy helped to diagnose many congenital anomalies of foetuses. These procedures can also determine the gender of the unborn child with varying degrees of accuracy. Once this is known, many parents would resort to abortion if the foetus happens to be female. Unfortunately, this practice is gaining popularity in many Asian countries. In Mahrashtra – a western state of India whose capital is Bombay – there are more than 500 so-called sex detection clinics.[21]

Female infanticide was common in both China and India. Since such practice has been penalized by law, people have resorted to the modern version of female infanticide – i.e. miscarriage – which is usually carried out in the second trimester of pregnancy, as it is often difficult to diagnose the sex of the foetus in the first trimester. Unfortunately, a second trimester miscarriage is fraught with many complications and is considered a liability to the health of the expectant mother.

Female infanticide still exists in China even today. The Chinese government was recently compelled to change its family policy by allowing two children per married couple instead of the previous one child only. Female infanticide was common in pre-Islamic *Jahiliya*. The *Holy Qur'an* condemns such attitudes.

Conclusions and recommendations

Islam encourages procreation within wedlock without limits. However, Muslim governments, faced by the problem of over-population, encourage the widespread use of contraceptive means by coercion. Contraceptive pills are sold to the public at a nominal value, and most of the time can be obtained over the counter without a medical prescription. This results in many health hazards, as it may be taken by hypertensives, diabetics, patients suffering from varicosities, tumours, liver disease, or women over the age of thirty-five.

Some Muslim countries, like Saudi Arabia, are sparsely populated. The 1974 census estimated the population to be 7 million, with more than 3 million foreigners.[22] In 1986, the population had risen to an estimated 10 million, of whom 6 million were Saudis*. The popu-

* In the latest census of 1992, the population of Saudi Arabia was declared to be 16 million, with Saudis being more than 10 million.

lation density is given as 3 Saudis/km^2. By comparison, the density of population in the UK is 229/km^2.[23]

These figures demonstrated that the present policy of encouraging contraception and selling the contraceptive pills over the counter should be changed.

There is much need for reassessment of the present policies of Muslim governments regarding contraception. The judicial use of contraceptive means is allowed by Islamic teachings and should be encouraged. The present policy of limiting abortions (first trimester) to medical reasons and rape should continue.

REFERENCES

1. *Holy Bible*, Genesis 1:27–28. New international translation. London, Sydney and Toronto, Hodder & Stoughton 1980.
2. Sura 4, *Al Nisa (Women)*, Aya 4.
3. Sura 16, *Al Nahil (The Bee)*, Aya 72.
4. Ibn Maja, *Sunan Ibn Maja*, Cairo: *Matbat Issa Al Halabi* (nd). *Kitab Al Nikah*, 8.
5. Ahmed ibn Hanbal, *Musnad Ahmed.* Comment by Ahmed Shakir, Cairo. *Dar Al Maarif* (nd). vol.3:158, 245; vol.4:349, 351.
6. Al Bukhari, M., *Al Jamie Al Sahih*, Cairo. *Maktabat Al Nahdah Al Haditaha*, 1367H (1956); *Kitab Al Nikah*:96, *Kitab al Maghazi*:32.
7. Muslim (Al Qushairi), *Al Jamee Al Sahih*, Cairo: *Dar Ihya al Kotob Al Arabia, Issa al Babi Al Halabi* (nd). *Kitab Attalaq*:15, 26, 27, 28.
8. Muslim (Al Qushairi), *vide supra* 25.
9. Ahmed ibn Hanbal, *Musnad Ahmed*, Comment by Ahmed Shakir, Cairo. *Dar Al Maarif* (nd). 3:51, 53, 313, 388.
10. Ibn Maja, *Sunan Ibn Maja*, Cairo. *Matbaat Issa Al Halabi* (nd); *Kitab Al Nikah*:30.
11. Al Kardawi, Y., *Al Halal walharam*, 13th edn. Beirut 1980; *Al Maktab Al Islami*: 191–195.
12. *Holy Bible*, Genesis 38:8–10, New international translation. London, Sydney and Toronto; Hodder & Stoughton 1980.
13. Albar, M., *Man'o alHamil wahokmoho fi al Islam. Al Muslim al Moaser* magazine 1984 (1404H) 42(11):91–100.
14. *Encyclopedia Britannica*, 15th edn. Encyclopedia Britannica Inc. Chicago, London, Paris, etc. 1982; 2:1069.
15. Potts, M., Diggory, P., *Textbook of contraceptive practice*. 2nd edn. New York and Melbourne, Cambridge Univ. Press 1983; 287, 315.
16. Nazer, I., The Tunisian experience in legal abortion. *Internat. J. of Obstet & Gynec.* 1979; 17:493.
17. Albar, M., *The problem of abortion* (Arabic); 2nd edn. Jeddah, Saudia Publishing House 1986; 37–45.
18. Ghanem, I., Abortion as a necessity (Arabic). *Al Faisal Med. J.* 1984; 9:61–65.

19. Al Mashoor, A.R., *Ghaiat talkhis al morad min fatwa ziyad.* Beirut: Dar Al Maarif:247 (printed with Boghiat Al Mustarshidin).
20. Al Booty, M.S., *Masaalat tahdid al nasil wiqayatan wa-ilagan.* Beirut; Maktabat Al Farabi 1976; 135–153.
21. Tift, S., Curse heaven for little girls. *Time* magazine 1988; 4 January, 1:46–47.
22. *Encyclopedia Britannica*, 15th edn. Encyclopedia Britannica Inc. Chicago, London, Paris, etc. 1982; *Microped.* 8:920.
23. *ibid.*, 10:266.

CHAPTER NINETEEN

ETHICAL PROBLEMS RAISED BY THE NEW TECHNIQUES OF HUMAN PROCREATION

Introduction

Infertility and sterility is estimated to affect some 5–10 per cent of couples all over the world. The new technologies of human procreation, including Artificial Insemination by Donors and In Vitro Fertilization, are welcomed by many of those who are suffering from this misfortune. However, these techniques are associated with many legal, ethical and religious problems.

These problems are here discussed in the light of Islamic teachings, which prohibit the introduction of a third party in the act of procreation, whether it be a sperm, an ovum, a pre-embryo or a hired womb (surrogate mother). Islamic teachings also prohibit procreation outside wedlock.

IVF is also an expensive procedure for procreation. Most, if not all, developing countries cannot afford it; especially so when these countries are suffering from over-population and are spending millions of dollars in their efforts to curb population increase.

Nevertheless, IVF and other procedures will play a rôle, though admittedly very small, in helping childless couples. Centres for IVF have already sprung up in many countries, including seven centres in Saudi Arabia, whereby many children have already been born via this method.

This problem is expected to emerge soon in many Islamic countries, despite the strict stance of Islamic jurists, who only allow procreation between spouses in their lifetime. The fate of excess oocytes and frozen embryos resulting from IVF projects will cause many ethical, religious and legal problems, even if Islamic teachings regarding procreation are strictly adhered to.

These problems are discussed, with an holistic view of the prob-

lems of infertility. It is suggested that Islamic teachings, if faithfully adhered to, provide many means for primary prevention and hence mitigate this worldwide problem.

Infertility poses a major obstacle for millions of couples who yearn for children of their own. In the USA, in 1976, one in ten of the population at the age of fertility was suffering from infertility. In 1984, this had increased to one in six. The estimated increase in infertility due to tubal causes in the last two decades in the USA alone, was 300 per cent.

The three most important causes for this horrendous increase are:

1. An unprecedented increase in sexually-transmitted diseases: In the USA, the estimated annual cases of gonorrhoea are 3 million, chlamydia 6 million, with genital herpes and primary and secondary syphilis at half a million each. Similarly, there is a global increase of the incidence of STD (sexually transmitted diseases).

2. Abortion: Since abortion is legalized in many countries, there are around 50 million abortions carried out annually around the world. About 25 million are carried out in the developing third world.

3. Intrauterine Devices (IUD): Millions of women are using IUD globally.

There are other causes, which include the compulsory procedures taken by some governments of the third world to curb the increase in population. (For example, Mrs Ghandi's decision to order the ligation of *vas deferences* of many men in India).

Tuberculosis and sepsis, especially during delivery or at operations, play an important part in many third world countries. Sex during menstruation and delayed age of marriage increase the incidence of infertility.

Therefore, any procedure that would participate in the treatment of those suffering from infertility is a welcome one. However, since the introduction of IVF and the successful birth of Louise Brown in 1978, many ethical and legal problems have been raised.

As the technique advanced, new alternatives to traditional parenthood were practised. There are at least 16 reproductive alternatives available now, involving various combinations of sperm and ova from husbands, wives and third parties, as well as choices as to the location where fertilization occurs and who carries the pregnancy to term. Many of these issues are completely new with no precedent or baseline from which an ethical, religious or legal decision could be taken. This has led to heated discussions, involving all those interested in the

subject, ranging from members of legislative houses to members of the media.

However, Islamic teachings have some definite rulings that would limit the whole problem when it arises in Islamic countries in the near future – (there are already seven centres in Saudi Arabia, with the delivery of many children).

Islam does not accept adoption as a way of parenthood, though it does encourage the raising of orphans and children with unknown parents. Islam also does not allow the involvement of a third party, in any way, in the process of procreation. The third party may be a donated sperm, ovum (egg), pre-embryo or uterus.

Artificial Insemination Donation (AID)

AID is an accepted method, ethically and legally, in the West. This method is forbidden in Islam – with the exception of AI by the husband. This is accepted by Muslim jurists provided it occurs within the lifetime of the matrimonial bond. The procreation of a child outside wedlock, or after the cessation of wedlock, is considered void.

Many courts in the West have agreed to parenthood outside wedlock, and many others have allowed a widow to have artificial insemination via her deceased husband's semen kept in deep freeze.

Islamic teaching, which prohibits fornication, adultery, homosexuality, aberrant sexual acts or even sex during menstruation, will definitely help in decreasing the numbers of those who suffer from infertility. Similarly, prohibition of non-medical abortion and the use of IUD (early abortion) will help to mitigate this problem. Nevertheless, even if Islamic teachings are faithfully practised and IVF is allowed only between spouses during their lifetime, problems are bound to appear. These problems are summarized as follows:

1. IVF is very expensive. Even in the developed rich countries, where major health problems suffer from meagre financial allotments, spending on IVF is almost an anathema.
2. The IVF success rate is still low: 30 per cent pregnancies in the best centres in the world, of which at least one-third will abort. The 'take home' babies – i.e., successful delivery rate – is 10–15 per cent in the best centres.
3. Laboratory errors are liable to occur, so that a sperm or ovum of a third party is introduced.
4. If semen banks are allowed to practice, as is occurring in the West, many problems will appear.
5. As IVF is practised in private, profit-making centres, with no legislation or regulation at present in developing countries, it is

liable to deviate from Islamic teachings and pursue unethical means in order to maximize financial gain.

6. IVF involves stimulation and induction of ovulation (clomiphene, HMG, HCG, etc.) resulting in procurement of many oocytes (up to 50). The oocytes are usually fertilized with a success rate of 80 per cent, and grow to 4–8 cell blastulae (also with a success rate of 80 per cent). Three to four embryos are usually transferred to the uterus. Replacing more embryos results in an increased failure and loss of pregnancy. If it is successful, it results in a multiple pregnancy – which is associated with hazards, both to the mother and her embryos.
7. Freezing embryos: Preservation of embryos allows fewer embryos to be replaced on several different occasions with less hazards to the mother, and at a lower cost.

However, cryo-preservation of embryos raises many difficult legal, ethical and religious issues, viz:

a) When one or both spouses dies unexpectedly while their frozen embryos are still available, should the embryos be thawed and transferred to surrogate mothers? Surrogate motherhood is completely and unanimously prohibited by Islamic jurists of today. Surrogate motherhood is still debatable in the West.

b) If pregnancy occurs successfully to full-term and delivery, what to do with the excess frozen embryos? Can the parents donate them for infertile couples, married or unmarried, or even for lesbians? Donation of embryos will involve third parties in the act of procreation even if it is in wedlock, and in Islam, involvement of third parties is prohibited.

c) Then, if donation is not allowed, what to do with excess frozen embryos. Is it allowed to do research? And for how long? Islamic jurists such as Ibn Al Qaim, who lived in the thirteenth century AD, and Ibn Hajar Al Asqalani (sixteenth century AD), argued that human life (ensoulment} only occurs when the nervous system is developed in the embryo and when voluntary movements have started. Prior to that, the embryo has only a vegetative life. Abu Hamid Al Ghazali (twelfth century AD), in his reference textbook *Ihya Ulum Al-Din*, argued that, though ensoulment occurs at a later stage in development, the life of the embryo should be respected from the time of fertilization. Most of the jurists agreed with his viewpoint.

However, there is no clear Fatwa (juridical opinion) by the Muslim jurists on this subject.* That there should be many different viewpoints is understandable. Some jurists may take sides with the advantages accruing from allowing scientists to culture unwanted embryos to a certain age limit (e.g., the development of the nervous system). The medical advantages are numerous. Many chromosomal and hereditary diseases will be studied further which might enhance or light the way to a cure. Besides, the embryonic tissues can be used for transplants. They are better organs for transplantation than cadaver or adult organs.
Most jurists will stand by the sanctity of human life even at an early embryonic level.

d) The embryos can be examined prior to their replacement. If a disease could be detected, it may be better not to replace the affected embryo, than to abort it at a much later stage. It is possible to decide the sex of the 4–6 cell embryo, and if there is a sex-linked serious disease, the embryo may not be replaced. This may open the path for parents to choose the sex of their embryos, the unwanted sex being discarded prior to replacement.

8. It is possible that in the near future some societies or governments, wishing to have super humans, may choose gifted, clever, strong men to donate their semen and fertilize the eggs of gifted, clever, beautiful women. The resulting embryos are then transferred to many surrogate mothers.
Such a procedure is completely prohibited in Islam.
Al Bukhari narrates that Sayida Aiysha described the different types of pre-Islamic (*Jahiliya*) marriages known to the Arabs. One of them was to choose a strong courageous man to sleep with one's wife, in order to get strong progeny. Islam considered that type of reproduction as *Zina* – i.e., fornication.
The above-mentioned procedure involves third parties and procreation outside wedlock, which is proscribed in Islam.
9. Artificial Insemination Donation (AID) from the semen bank is associated with the following problems:
   a) Sexually transmitted diseases, especially of viral origin – e.g., HIV, HBV, cytomegalovirus – may be transmitted via AID.

*Recently a Fatwa was passed by the 6th Muslim jurist conference held in Jeddah, 20 March 1990, whereby preservation of embryos was not allowed. Similarly, freezing sperms and ova (eggs) was declared unlawful in Islam. Research on leftover embryos is not allowed, and growing of embryos for the sake of organ transplantation is prohibited.

b) Inherited diseases may also increase, if the embryo bank accepts donors without meticulous examination and history-taking.
c) There are already a quarter of a million children born by AID in USA. They will never know who their fathers were.
d) Indirect incest: the semen of the donor may be used to fertilize one of his close relatives, e.g., his sister, daughter, or aunt. Such incidents have already occurred.

10. All these problems can occur with IVF using third parties.
11. Surrogate mothers are still a matter for heated debate. Some of these surrogate mothers refuse to give up their babies after delivery to those who 'rented' them for this process.
12. Whatever may be the success of IVF and AID, it will not solve the increasing problems of sexually-transmitted diseases which participate in the increase of infertility. Similarly, more abortions are carried out all over the world, and this in itself causes an increase in infertility. The use of IUD is also associated with a higher infertility rate and hence, with a global increase in the use of IUD, infertility is going to increase.

IVF and AID will only solve a small percentage of those suffering from infertility, and then only at a very high cost – financially, ethically, and religiously.

For the Muslim countries, these means of procreation are fraught with many dangers that would affect the stability of family life and encroach upon Islamic teachings, quite apart from being very costly. Rigorous protocols and supervision should be enforced. These projects should be limited to governmental or non-profitmaking institutions.

CHAPTER TWENTY

THE DURATION OF PREGNANCY IN MEDICINE, LAW AND SHARIAH

Abstract

The average period of normal pregnancy is 280 days computed from the first day of the last menstrual period (LMP) or 266 days from fertilization.

The minimum period of viable pregnancy was considered to be 28 weeks. With recent advances in intensive care medicine, premature babies of 22 weeks and weighing more than 500g have been rescued.

Islamic jurists almost unanimously accepted six lunar months, from the last day of cohabitation, as the minimum period of pregnancy.

The maximum period of pregnancy is, however, disputed among jurists. The Canon Law is variable from country to country and even in the same country courts will differ. British courts have recognized 331 and 346 days as the maximum period of pregnancy. In New York State the court considered 355 days of pregnancy as legitimate.

However, obstetricians express their disbelief in such prolonged pregnancies.

The situation with Islamic jurists is more complicated. Some jurists like Ibn Hazm (Zahiriya School) and Shi'i Jafari will accept no more than nine months. Others like Ibn Rushd (Averroes) and Ibn Abdul Hakam will accept one lunar year as the maximum upper limit. Abu Hanifa and Al Thouri accept two years. Al Laith ibn Sa'ad accepts three years, while the Shafi, Hanbali and Zaidi accept four years as the maximum period of pregnancy. Maliki school identifies five years as the maximum period, Al Zuhri puts it at seven, while Abu Obaid fixes no upper limit.

Similarly, the laws in Muslim countries differ. In Saudi Arabia, the maximum period of pregnancy is four years,* while in Iraq and Jordan it is two years. In most other Muslim countries new legislations limit the maximum period of pregnancy to one solar year. However, in Tanganyika (Tanzania) and Nigeria, four years are still considered to be the appropriate maximum period of pregnancy.

This study considers the different viewpoints in this regard and tries to explain the cause of differences.

It also points out the importance of clarifying these contradictory legislations. It calls for special committees to study the situation.

It is not impossible to come to a unified decision on these matters on medical science. Jurists are, after all, seeking the truth and hence, since there is no mention of the maximum period of pregnancy in the *Holy Qur'an* or *Sunnah*, it is imperative for jurists to take the scientific medical facts for their rulings.

The average period of normal pregnancy is 280 days computed from the first day of the last menstrual period, or 266 days from ovulation.[1,2] The expected date of delivery can be estimated by adding seven days to the date of the last menstrual period (LMP) and adding nine calendar (Gregorian) months or subtracting three calendar months.

Considered in lunar Hejri months, which are either 29 or 30 days, the period of pregnancy is nine months, viz: 29.5 x 9 = 265.5 days. The expected date of delivery is estimated by adding 14 days to the date of LMP and adding nine or subtracting three Hejri months.

Whether computed in Gregorian or Hejri months, there is only a five per cent chance that delivery will occur on the exact estimated date. This ratio rises to 25 per cent if a margin of four days before or after the estimated date is allowed. There is a 95 per cent chance that the baby will be born within plus or minus 14 days of the estimated date of delivery.

The minimum period of viable pregnancy

Until quite recently, the minimum period of viable pregnancy was considered as 28 weeks (from LMP). Sir Stanley Clayton in his book *A Pocket Obsteterics* (1976)[3] states that 'babies born before 28 weeks, with an expected weight of less than 1100g are regarded as non-viable.'

---

* Sheikh Abdul Aziz bin Baz, the Grand Mufti of Saudia Arabia, accepted seven years as the maximum period of pregnancy.

However, with recent means of resuscitation,[4] infants as small as 22 weeks and weighing more than 500g were rescued. *Al Bilad* newspaper[5] reported the delivery of a viable six-month infant at the Maternity Hospital, Jeddah, in 1978.

Delivery between 20 weeks and 38 weeks of gestation, is considered as premature birth, which may be viable with modern intensive medical care.[4]

Islamic jurists (*Fuqaha*) are almost unanimous that the minimum period of pregnancy is six months computed from the last day of cohabitation. The legitimacy of the new-born baby begins to run from the time of consummation. However, the Hanafi School computes the six months from the time of the contract of marriage.[6, 13]

Ibn Qudama in *Al Mughni*[7] (the reference text of Hanbali School) stated that the minimum period of pregnancy is six months. A husband complained to Omar ibn AlKhattab (the second Caliph) that his wife delivered a viable baby after a six-month period of marriage. Omar accused her of premarital fornication. Ali ibn Abi Talib objected. He deduced from the following Quranic *ayas* [verses] that the minimum period of pregnancy is six months.

Sura 2/233: 'Mothers shall suckle their babies for two full years, for those who desire to complete the full period of suckling'.

Sura 46/15: 'His bearing and his weaning are thirty months' – [30–24 = 6].

Omar, then exonerated the lady who was reported to have had another six-month viable pregnancy.

Ibn Qutaiba has also mentioned that the Omayad Caliph Abdul Malik bin Marwan, was also delivered at six months pregnancy.[7]

Al Qortubi[8] and Ibn Kathir[9] in their T*afsir* (E*xegesis*) of the *Holy Qur'an* reported the previous incident to have occurred during the reign of Otham ibn Affan (the third Caliph).

Ibn Al Qaim[10] in his book *Al Tibyan Fi Aqsam Al Qur'an* (Exposition of Oaths in the *Holy Qur'an)* said: 'The Shari-ah as well as nature have shown that the minimum period of gestation is six (lunar) months.'

Although the consensus of opinion among Islamic jurists is that the minimum viable period of pregnancy is six months, some Hanbali jurists recognize nine months as the normal minimum.[6,11] Therefore, a child born in less than six months of marriage is presumed illegitimate. However, some jurists would acknowledge its legitimacy, provided the child's father acknowledges it, on condition that he does not state that it was the product of fornication.[6]

A child born at six months pregnancy or more is presumed legiti-

mate unless the father disclaims it through the process of *Lian* (imprecation, or Oaths of Condemnation).

The child in such a case will be lawfully related to his mother, even if she admits fornication. However, in Shi'i Jafari law, such a child is not lawfully related to her.[6]

In English law, there is a presumption that a child born or conceived in wedlock is legitimate until the contrary is proved. If the father acknowledges the child, then it is legitimate whatever may be the length of pregnancy.

Under the Norwegian Law of 1915, the illegitimate child has the same relationship to the father as to the mother.[6] In the former Soviet Union, the law equates an illegitimate with the legitimate child. However, the French law, considers the minimum period of gestation as six months (similar to Islamic law).[6]

Egyptian law considers the minimum period of viable gestation as nine months. Al Berri[11] in his book *Alahkam Alassasia Lil Mawarith Wa-Al Wasiyya* – the basic laws of inheritance and testament – states that the Egyptian law has endorsed the minimum period of pregnancy as nine months, which is fixed as 270 days to avoid variations in court judgement. A child born prior to this period is not entitled to inherit his deceased father (article 43). He can be considered illegitimate if the father does not acknowledge it.

This is contradictory to the consensus of opinion of Islamic jurists. It is also contrary to medical knowledge.

The Alexandria Court of First Instance, Case No. 128, Session 18.11.1956, held that if a man acknowledges a child as his, the child will be considered legitimate even if it was born after less than six months of pregnancy, and even though the conception has taken place during the *idda* of the divorced woman.[6] Such a marriage would be considered irregular (*fasid*) in Shari-ah Law and the child would be attributed to the first husband and not the second.

The law in India and Pakistan considers the child as legitimate if it is born in wedlock, even if marriage was consummated only few weeks or months prior to the child's delivery.[6] Pakistan's Shariat Act (1951), Section 2, has reactivated the application of Islamic Law as it states that legitimacy or bastardy is henceforth to be governed by the Shari-ah Law.[6]

The maximum period of pregnancy

Some women have prolonged menstrual cycles. As the duration of pregnancy is usually computed from the first day of LMP, this may lead to a prolonged period of pregnancy.

A woman may have a septate [divided] uterus. Theoretically, a foetus could begin to develop in one compartment and die without miscarriage, and then she gets pregnant in the other compartment, and finally deliver normally. This will lead to a prolonged period of pregnancy.

Similarly, some women who are eager to be pregnant, fall prey to the notion of pregnancy, the so-called pseudocyosis. The periods stop and the abdomen swells with gases. Such a lady may become pregnant, and hence would consider her pregnancy to extend for years.

A dead foetus may calcify and remain in the uterus for many years without being expelled.

Obstetricians, however, refute the claim of prolonged pregnancies that exceed one month or so from the scheduled time of pregnancy unless there is one of the above-mentioned reasons.

Sir Stanley Clayton[2] described the court's decision of accepting 346 days of pregnancy, as being 'beyond scientific belief'.

The Legal Decision is variable from country to country, and even in the same country. One court in the State of New York has accepted a pregnancy of 355 days as legitimate.[1] British courts have recognized 331 and 346 days as legitimate. The legal decision is extremely variable in Muslim countries, at the moment.

In the Kingdom of Saudi Arabia where the Hanbali Law (*Fiqh*) is in force, the maximum acceptable period of pregnancy is four years. Chief Qadi of Makka Mustafa bin Abdul Qadir Al Alawi, ruled that Khadija, who delivered a baby four years after her divorce, to be legitimate.[6*] The ex-husband, who disclaimed the child, was forced by Shari-ah Law to accept it, and to pay recompense for his divorced wife for the whole period of assumed pregnancy as she would be in *idda* (the period during which a divorced or widowed woman is not allowed to remarry).

In Iraq, where Hanafi Law is in force, Qadi A. Kharufa of Basra Sunni Court ruled that a child born two years after divorce was legitimate.[6]

In Egypt, the legislation of 1920 and 1929 (Law No.25, articles 15 and 17) set the maximum period of pregnancy as one solar year (365 days).[6]

With some variations, the Sudanese (March 1935 – Judicial Circular No.41), Syrian (1953), Tunisian (1957), Moroccan (1958),

*Sheikh Abdul Aziz bin Baz, Grand Mufti of Saudi Arabia and Sheikh Bakr Abu Zaid, Deputy Minister of Justice declared that they accepted up to seven years as the maximum period of pregnancy (Islamic World League Conference of Jurists in Makkah 16–17 Feb1990)

South Yemen (1974), all followed suit. In all these countries the maximum period of gestation is fixed at one solar year.[6]

The Jordanian Law of 1951 and the Iraqi Law of 1959, do not prescribe any maximum period of pregancy. Nevertheless, the Shari-ah courts take two years as the maximum period of pregnancy according to the Hanafi Law.[6]

In India and Pakistan, a child born 280 days after the termination of marriage will not be presumed legitimate, unless the courts find some other binding evidence. The claim of paternity may be rebutted by proof of non-access.[6]

The period of maximum pregnancy is a matter of conjecture in the Shari-ah Law.

The Shafi, Hanbali and Zaidi (Shi'i Sect of Yemen) recognize four years as the maximum for pregnancy. The Maliki considers five and Al Zuhri considers seven years as the appropriate maximum duration of pregnancy. The Hanafi think it is only two years, and Abu-Ubaid sets no limit. The Shi'i Jafari (mostly in Iran) and the Zahiriya (Da'ud and Ibn Hazm, an extinct sect) refute any length of time beyond nine months [6.12]

Ibn Rushd,[13] the famous philosopher (Averroes), physician and jurist, in his book *Bidayat Al Mujtahid* supported the opinion of Ibn Abdul Hakam (another Maliki jurist) who claims that the maximum period of pregnancy should be one lunar year.

The Egyptian Law of 1929, took sides with this view and extended the maximum period to be one solar year.

There is no mention of the maximum period of pregnancy in the *Holy Qur'an* or *Sunnah*. This explains the extreme divergence of opinion amongst the various Islamic scholars, as each tried his best to reach a decision according to occurrences.

The Hanafi and Al Thawri limit the maximum duration of pregnancy to two years. This view is based on a saying attributed to Lady Ayisha (the youngest wife of the Prophet). The authenticity of the saying was doubted by many scholars as the narrator Jamila was unknown and hence the *'sanad'* (chain of narration) was considered uncertain.

The Maliki School took the view of five years as the maximum period of pregnancy because a lady neighbour of Iman Malik delivered her baby after five years of pregnancy.

The wife of Mohammed bin Ajlan gave birth to three children over a period of twelve years, each pregnancy lasting four years. Imam Ahmed bin Hanbal said: 'The women of the tribe Bani Ajlan carry for a period of four years.'[7] Abu Al Khattab said that

Mohammed bin Abdullah, (a descendant of Ali ibn Talib) and Najeeh Al-Ogaili were each delivered after four years of pregnancy. Omar bin Al Khattab set a period of a missing husband (*mafqud*) at four years, after which his wife may remarry if no sign of his existence is found.[6,7,13]

The Hanbali, Shafi and Zaidi Schools took the view of four years as the maximum period of pregnancy. Al-Laith bin Sa'ad limited the maximum period of pregnancy to three years as a concubine (slave wife) of Abdulla bin Omar delivered at three years.[7]

Al Dahhak bin Muzahim and Harem bin Hayyan were each delivered after two years of pregnancy.[6,7]

The marked discrepancy of setting a maximum limit for pregnancy is due to what the jurists called the actual occurrences and because to hold otherwise may lead to lapidation (stoning) of the mother for adultery.

Ibn Hazm in *Al Muhala*[12] said that the period of pregnancy cannot be more than nine months nor less than six months because the *Holy Qur'an* stated that: 'His bearing and his weaning are thirty months.' *Sura 46/15*; and in another *Sura* (*Sura 2/233*) stated that 'Mothers shall suckle their babies for two full years for those who desire to complete the full period of suckling.' 'Therefore,' Ibn Hazm says 'whoever claims a period of pregnancy and suckling to be more than thirty months is uttering falsehood and rebutting the word of Allah.' He referred to various reports of prolonged pregnancies as false and incredible, saying: 'No ruling in the Divine Religion is possible on the basis of such baseless and incredible stories.'[12]

It is easy for us to explain such prolonged periods of pregnancies. A woman may be eager to be pregnant – especially so if she is threatened by her husband to divorce her or remarry if she does not become pregnant. Under such circumstances her periods (menses) are lost and her abdomen swells with gases. The whole family becomes happy with the expected pregnancy which may last for years. It may happen that actual pregnancy occurs, and when she delivers her baby, the period of pregnancy would be computed in two, three, four or even seven years.

Pseudocyosis is a well-known phenomenon in gynaecology, which is rampant in North and South Yemen. I personally saw many women who were under the effect of this illusion. Matters become more complicated when the new-born is noticed to already have teeth (false teeth). If such a thing occurs, people will firmly believe in the accuracy of their assumption of prolonged period of pregnancy.

The subject becomes really problematic when a woman delivers

some years after divorce, or death of her husband. If she does not proclaim that her *idda* is over, she is not able to remarry, but she will be entitled for full recompense during the whole period of *idda* – (the *idda* will only end after delivery of the presumed prolonged pregnancy).

A baby born after such prolonged gestation will be considered legitimate and is entitled to have the name and wealth of his presumed father. Similarly, if the husband of the divorced wife dies while she is still pregnant (even four years), then she is entitled for her share in his wealth, provided that the divorce was not irrevocable.

The legislation differs in Muslim countries. Some will regard four years as the maximum duration of conception, as in Saudi Arabia. Others will accept two years, as in Iraq and Jordan; while in Egypt, Sudan, Tunisia, South Yemen and Morocco, one solar year is considered the maximum upper limit.

The present situation of the law in Muslim countries should be unified or at least made comprehensible.

In some countries – like Tunisia (1957) and South Yemen (1974) – polygamy became punishable and unlawful, whilst having paramours is not.

In other countries, like Tanganyika (Tanzania), divorced wives who deliver a baby some two years after the dissolution of marriage often vehemently maintain that this child was a child of adultery, and therefore theirs alone, against the former husband's claim of paternity.[6]

This ambiguous situation has arisen because the law considers the maximum period of pregnancy to be four years (according to Shafi School) and at the same time applies western laws in criminal matters which have no punishment for fornication.

The present situation in most Muslim countries needs urgent amendment. The ambivalence in the present legislations should be corrected according to the rules of Islam.

Men of Shari-ah, law and medicine are called to form specialized committees to study the intricate situation and to try to devise a unified non-contradictory law in these matters.

REFERENCES

1. *Encyclopedia Britannica*, 15th edn. 1982; vol.14:969.
2. Clayton, S., Newton, J., *A pocket obstetrics*, 8th edn. Churchill Livingstone, London, Edinburgh, New York 1976:11.
3. *vide supra*: 135–136.
4. *The Merck Manual*, 13th edn. Merck & Co. Inc. New Jersey 1977:949.
5. *Al Bilad* newspaper 24 December 1978.
6. Dr Isam Ghanem, *Islamic medical jurisprudence*. Arthus Probsthan, London 1982; 30–54; and *Comparative forensic medicine*, Beirut 1987.
7. Ibn Qudama Al Maqdisi, *Al Mughni* vol.7, 477 (or enlarged edition vol.9:115–117). Dar Al Kitab Al Arabi, Beirut.
8. Al Qortubi, Abu Abdulla., *Al Jamie Li Ahkam Al Qur'an*; *Sura* 46,15.
9. Ibn Kathir, Abu Al fida. *Tafsir Al Qur'an Al Karim*; *Sura* 46/15.
10. Ibn Al Qayyem (Mohammed bin Abi Bakr), *Attibyan fi Ahkam Al Qur'an*, Cairo Library, p.247.
11. Dr Zakaria Al Berri, *Al Akham Al Asasyah Lil Mawareeth Wal Wassiya Alwajiba*. Institute of Islamic Studies, Cairo (nd).
12. Ibn Hazm (Abu Mohammed) *Al Muhalla* vol.10:316; Dar AlFikr, Beirut (nd).
13. Ibn Rushd, Abu Alwalid; *Bidyat Al Mujtahid Wa Ni Hayat Al Mugtasid*; Dar AlFikr, Beirut; vol.2:35

INDEX

- A -

Abortion, Islamic view on; 147–153
  see also Contraception
Al Ghazali, Abu Hamid; 158
Abu Hanifa; 161
Abu Zaid, Sheikh Bakr, Deputy
  Minister of Justice; 165
Abu Obaid; 161
AIDS prevention, an Islamic approach
43–53;
  contagion hadiths, 76, 77, 79;
  ethical problems, 159, 160;
  WHO reports, 43, 44, 47, 48
Al-Ansari, Hassan ibn Thabit; 32
Al Asqalani, Ibn Hajar, 133/134
Al Bager, Dr O.S.; 27, 29
Al Baghawi; 134
Al Bukhari; 16, 69, 132, 133, 159
Al Bilad newspaper; 163
Alcohol, aphrodiasiac effect; 35, 36;
  cardiovascular system, 37/38;
  cold climates, 38;
  dependence, problems and solutions
  in Islam, 13–19;
  health-procuring properties of, some
  misconceptions, 31–41; and the
  oesophagus, 36/37; and the stomach,
  37; statistics in:
  Africa, 13, 23; Asia, 13; Bahrain, 27;
  Europe, 22; Germany, 13, 22;
  Latin America, 13; Scotland, 26;
  Sudan, 27;
  UK, 13, 22, 23, 26, 39; USA, 13, 14,
  18, 23, 24, 26, 32; USSR, 13, 26;
  WHO, 13, 14, 22, 23
Alexandria Court of First Instance, 164
Al-Dimishqi, Ibn Kathir, 33
Al Ghazin, 134
Al Haq, Gad, 7; see also Grand Mufti of
Egypt
Hakam, Ibn Abdul, 161, 166
Kitab Al Qadar, Muslim, 132
Al Qaim – see Al Qayyim
Al-Qayyim, Ibn, *The Key to the House
of Happiness*,
  The Medicine of the Prophet, 34, 65,
  66, 81, 124, 133, 134, 135, 158
Al Qazwini, Zakaria, porcine bone
grafts, 5
Al–Razi, Abu Bakr, *The Benefits of
Food*, 33, 36
Al Rhaza, Al Fakker, 134
Al Sadiq, Imam Ja'far, 33, 34
Al-Shafie, Al-Imam, *Al Risalah*, 56
Al-Shirbini, Al-Khateeb, 35
Al Thouri 161
Al Zuhri 161
Anthrax (Bacillus anthracis), 88
Asshirbini, Al Imam, 5
Averroes – see Ibn Rushd
Avicenna – see Ibn Sina
Ayesha, Lady, 16, 159

- B -

Bacterial diseases, 86 – 90
Badr, Battle of, 5
Baldwin, James, *The Fire Next Time*, 18
Basalamah, Prof., 129
bin Baz, Sheikh Abdul Aziz, Grand
  Mufti of Saudi Arabia, 165
Bone transplantation, 5; see also Imam
Nawawi
Brain death, 8, 144

Breast-feeding and Islamic teachings 103 – 113;
Dr Hassan Chamsi-Pasha, co-author, 103;
Holy Qur'an 104–106, 111; Prophet Muhammad, 106; WHO 104, 106, 112; UNICEF, 106
Brucellosis, 86/87

- C -

Catholic church, 147/148
Chamsi-Pasha, Dr Hassan, 103; see also Breast-feeding and Islamic teachings
Clayton, Sir Stanley, *A Pocket Obstetrics*, 162, 165
Clostridial infections (anaerobes), 88
Contagion Hadiths, corroborative study, 69 – 82;
classification of pathogenic bacteria to man, 74/75;
and AIDS, 79
Contraception and abortion, Islamic view on, 147 – 153
Maliki school of Islamic Sunni jurisprudence, 148;
Hanbali, 148; Hanafi, 148; Sha'afi, 148
Corneal transplants, 7
Council of Churches (UK), 50

- D -

Daily Mail, 25

- E -

Egyptian law and pregnancy, 164, 165, 166
Encephalomyocarditis (Picornaviradae), 86;
see also foot & mouth disease
English law and pregnancy, 164
Erysepeloid, 88/89

- F -

Fatwas, 3, 7, 8, 9, 10, 11, 159
Foot & mouth disease (Picornaviradae), 85, 86; see also encephalomyocarditis
Fusiform necrophorum, infections caused by, 88

- G -

Gastroenteritis in children (Reoviridae), 86
Ghanem, Dr Isam, 1, 2, 39, 145/6
Ghanem, Prof. Qais, 39
Grand Mufti of Egypt, 7
Grand Mufti of Saudi Arabia, 165
Gynaecology, some aspects as expressed in the *Holy Qur'an*, 137 – 141

- H -

Hadiths – see under the Prophet Muhammad
Hanafi School, 148; see also Islamic Sunni jurisprudence law, on pregnancy, 165, 166
Hanbali School, 148; see also Islamic Sunni jurisprudence law, on duration of pregnancy, 165, 166/7
Hayyan, Jabir ibn, 32
Hefty, Debora, 106
Hitchman & Adler, 125
Holy Bible, 50, 51; New Testament, Old Testament, 50/51;
Old Testament, Leviticus, 61
Holy Qur'an and AIDS, 50; alcohol (Khamr), 15, 16, 17;
and breast-feeding, 104/105, 111;
gynaecology, 137–141;
and the human corpse, 143;
immunolgy of human milk, 115;
infectious diseases, 83, 84;
and medical jurisprudence, 56, 57;
and menstruation, 127, 128;
and pregnancy, 163, 166; the soul, 131, 134;
uterine cycle, 125
Human colostrum and milk as sources of viable cells, 116
of colostrum and milk lymphocytes, 118; human milk fat globule membrane, immunologic activities of, 117/18;
Human corpse, Islamic view on, 143 - 146
Human procreation, new techniques of, ethical problems raised by, 155 – 160
Hureidi, Sheikh, see also Grand Mufti of Egypt, 7

- I -

Ibn Hazm (Zahiriya School), 111, 161, 167

Ibn Al-Khatab, Khalifa Omar, 105
Ibn Kathir, 134
Ibn Khaldun, 69
Ibn Masood, Abdulla, 133
Ibn Rushd (Averroes), 161, 166
Ibn Sina (Avicenna), 33
Immunology of human milk and Islamic teachings, forbidding marriage between foster-kindred – a corroborative study, 115 – 122; Dr Mohammed Aymen Sof, co-author, 115; Traditions of the Prophet, 115, 119, 120
Indian law and pregnancy, 164
Infectious diseases, 71, 72; and the *Holy Qur'an*, 83, 84; Dr Khalid Amin Mohammed, 83; Taenia solium, 83; transmitted from pigs to man, 83–90; Trichenella spiralis, 83; viral and bacterial diseases, 83–90;
Influenza Type (A) (Picornaviradae), 85
Islam, and AIDS prevention, 51;alcohol dependence, 13–19; organ transplantation, 3–11
Islamic Council, International, 7
Islamic jurists, 131, 147, 148, 149, 150, 161–169; International Conferences, 2nd, 8; 3rd, 3, 8; 4th, 8; 6th, 3, 8, 129; League conference and brain death, 8
Islamic law, (Shari'ah), 56, 144/145, 160, 164, 165, 166
Islamic medical jurisprudence, outline of a syllabus, 55 – 60
Islamic Sunni jurisprudence, 148
Islamic World League of Jurists, Makkah 1990, 165

- J -

Japanese encephalitis (Togarviridae), 83, 84, 85
Jordanian law of 1951 and pregnancy, 166

- K -

Khafer, Sheikh, 7; see also Grand Mufti of Egypt
Khamr, 16, 17; see also *Holy Qur'an* and alcohol, Lady Ayesha and alcohol dependence
King Faisal Specialist Hospital, Riyadh, 106
Koop, Everett, USA Surgeon General, 14

- L -

Lancet, 107, 111
Leprosy Ahadith, a study in the light of medical knowledge, 61 – 67; WHO reports, 62/63
Leptospirosis and Weil's disease, 87
Lewis, Sir Aubry, in *Price's Textbook of Medicine*, 27
Life magazine, 18
Listeriosis, 87
Living donors, 6, 7

- M -

Maamoon, Sheikh Hassan, 7 see also Grand Mufti of Egypt
Maliki School, 57, 148, 149, 161, 166 see also Islamic Sunni jurisprudence
Meliodosis, 90
Menstruation, a vulnerable period, 127 - 130; Prof. Basalamah, 129; in Holy Qur'an and Sayings of the Prophet, 127/128; Sixth Saudi Medical Conference, 129
Mohammed, Dr Khalid Amin, 83
Mycoplasmosis, 90

- N -

Nawawi, Imam, *Minhaj Attalbin*, on alcohol dependence, 34/35; bone and teeth transplantation, 5
Nizamuddin, Dr Nabeel, co-author Islamic View on the Human Corpse, 143
Non-infectious diseases, 70, 71; epidemiological studies, 93; fat and cancer, 91–101; in rats, 94; migrant studies, 91; and Mormons, 93; and pork diet consumption, 91–101; Seventh Day Adventists, 91
Norwegian law, and pregnancy, 164

- O -

Organ transplantation, an Islamic perspective, 3 – 11;

in the battles of Badr and Uhud, 5; bone transplantation, 5; Fatwas on, 3, 7, 8, 9, 10; historical background, 4, 5; Islamic principles and rules, 5, 6; sayings of the Prophet, 4, 5; in Saudi Arabia, 3; Tagliacozzi, 4; tooth transplantation, 4, 5

- P -

Pakistan's Shari'at Act and pregnancy, 164
Pasteurollis, 90
Porcine bone grafts, 5
see also Zakaria al Qazwini
Pregnancy, duration of, in medicine, law and Shari'ah, 161 – 169
Price's Textbook of Medicine, 27
Prophet Muhammad, 106; sayings of, on alcohol dependence, 13, 16, 17, 32, 33; contagion hadiths, 69–82; hadiths, 56, 61, 64, 65, 69–82, 115, 128, 131, 132–135, 143; human corpse, 144/145; immunology of human milk, 119, 120; Islamic law, 56; leprosy, 61, 64–66; menstruation, 127; new epidemics [AIDS], 49; organ transplantation, 4, 5; the soul, 131–135; uterine cycle, 123–125
Protestant church, 148

- Q -

Qadir Al Alawi, Mustafa bin Abdul, Chief Qadi of Makkah, 165
Quinlan, Karen Ann, 39

- R -

Rhazee – see Abu Bakr al-Razi
Ross River fever (Togarviridae), 86

- S -

Sa'ad, Al Laith ibn, 161
Salmonellosis, 87
San Diego Lactation Programme, 110
Saudi Arabia, Kingdom of, 3; Dept. of Research & Fatwa, 7; Grand Ulema, 7; and duration of pregnancy, 165
Sayida Aiysha – see Lady Ayesha
Sha'afi School, 148
see also Islamic Sunni jurisprudence
Shakespeare, William, 35
Shari'ah law – see Islamic law
Sheikh Shaarawi, 6
Shi'i Jafari, 161
Sixth Saudi Medical Conference, 129
Socio-Medical problems related to alcohol consumption 21 – 29; in relation to crime, 21; in the Sudan, 27; WHO, 23, 23
Sof, Dr Mohammed Aymen, co-author Immunology of Human Milk & Islamic teachings, 115
Soul, when is it inspired? 131 – 136; in the *Holy Qur'an*, 132; and the Prophet Muhammad, 132
Streptococcal infections, 87/88
Supreme Islamic Council, 7
Susrata Sanhita and organ transplantation, 4
Swine dysentery, 89/90; E. coli, Fusiformis, Spirochetes, 89/90
Swine vesicular disease (Picornaviradae), 86

- T -

Tagliacozzi, on organ transplantation, 4
Tooth transplantation, 4, 5
Toynbee, Arnold, *Civilization on Trial*, 17/18
Tuberculosis (mycobacterium tuberculosis humanis), 89; bovis, 89; avium, 89

- U -

Uhud, battle of, 5
UNICEF, 106; see also WHO
Uterine Cycle, The, as described in the *Holy Qur'an*, 123 - 125

- V -

Vesicular stomatis (Rhabdoviridae), 84, 85

- W -

Weil's disease, 87; see also leptospirosis

World Health Authority, 32nd Assembly, 13, 23
WHO, and AIDS, 43; alcohol dependence, 13, 14, 22, 23, 25, 26, 27, 39; and breast-feeding, 104, 106/107; Committee of Alcohol-induced Problems, 22; Expert Committee of Drug Dependence, 14, 27; and leprosy, 62; Technical Report 650, 25, 26

- Y -

Yersinia enterocolitis, 89; pseudotuberculosis, 89

- Z -

Zahiriya School – see Ibn Hazm