J O U R N A L O F

ISLAMIC ORGANIZATION OF FORENSIC MEDICINE

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Contents

Editorial

Following the successful holding of the first Islamic Countries Forensic Medicine Congress (ICFMC) in Tehran (June 23-25, 2004) attended by official representatives of Legal Medicine Organizations from Islamic countries, as well as scholars and specialists of this field, aimed to prepare for acquaintance, relation and coordination among these organizations and reflect their views and exchange their experiences concerning important scientific, jurisprudential and legal challenges in this regard faced by the world of Islam, an agreement for establishing the «Islamic Organization of Forensic medicine (IOFM)» and a permanent secretariat for it in Tehran was signed by all participants. It was also mentioned in the agreement that a biannual journal to create a mean of communication between IOFM members and informing them of its activities will be published.

In order to realize this important objective, and in spite of various executive and financial problems, the secretariat began its activities. My participation in the congress of «Islamic Codes in Medical Ethics» in Egypt and my colleagues in the second session of Mediterranean Academy of Forensic Sciences (MAFS) in Tunisia, were good opportunities to discuss the subject with other muslim colleagues from other countries in order to expedite the process of organizing the IOFM's secretariat. At present, two kinds of activities are being carried out by the secretariat, including scientific and executive ones. The scientific section is engaged in publishing the journal, review of the content of ICFMC, and preparing a list of challenges and problems in forensic medicine faced by Islamic countries. The executive section is preparing a databank about IOFM's members and updating the website of IOFM, along with international relations and follow-up of activities relating to the next congress(es).

Given the firm purpose of our colleagues in other Islamic countries and with their help and assistance, we hope for more success in coordinating our activities and having better means of communication (e.g. e-conferences, web sites, etc) to integrate our work and organization. I am glad to see that the first issue of the journal is ready to be published, and from now we will expect your views and comments on the journal's content and will be waiting to receive them along with your CV's, which will be used to select the scientific committee and editors of the journal. Since we intend to have «country reports» in every issue of the journal, it would be a great help to receive them from you in the future. We are trying to prepare the next issue before the congress which is to be held in Jordan, to serve as a means for promotion of the scientific level of the next congresses.

A Report on the First Islamic Countries Forensic Medicine Congress (ICFMC)

Considering various executive and scientific challenges in the field of forensic medicine in Islamic countries and their differing aspects in comparison with other countries, it was decided to hold the first Islamic Countries Forensic Medicine Congress in I.R.Iran, and considering the specific nature of subjects and necessity of comprehensiveness of the congress, in terms of its religious, legal and jurisprudential aspects, specially in its side meetings, it was suggested to consult scholars, jurists and medical professors and seek their expert opinions.

The main objectives of holding the congress include:

1- Providing a basis for acquaintance, relation and coordination between legal medicine organizations of all the Islamic countries and making their capacities known to others, through cooperation among them in order to attain qualitative and quantitative advancement in this field of medical science.

2- Reflecting Islamic countries' scientific achievements and findings in forensic medicine.

3- Introducing Islamic countries' views and experiences in face of important scientific, jurisprudential and legal challenges in this field shared by all of them.

4- Providing a basis for acquaintance, coordination and connection among scientists, physicians, jurists and religious scholars in various fields including forensic medicine, medical laws and medical ethics.

5- Reaching common policies, practical tactics and to share procedures and views on important challenges of forensic medicine in Islamic countries.

The following topics were approved after several meetings of the Organizing Committee:

1- Mulct and Blood-Money

2- Abortion

3- Organ Transplantation

4- Brain Death

5- Medical Ethics

6- Growth Determination

7- Cloning

8- Sex Change Operation

9- Assisted reproductive techniques

10- Medical Updates

In addition, introducing forensic medicine organizations of Islamic countries, their performance, expressing official views and explaining their future plans according to the congress' main topics by official representatives of the countries was one of the main objectives of the congress.

The first call for papers was published and invitations went to scientific research centers, individual researchers, forensic medicine specialists, jurists, jurisprudences and also student and resident physicians.

The international relations section of the secretariat in order to invite all relevant individuals and organizations in Islamic countries and other experts, did some search and negotiation. Following a meeting between the research deputy of LMO and the director general of political and international relations of the Ministry of Foreign Affairs, a connection with OIC (Organization of the Islamic Countries) was established, through which correspondence with legal medicine organizations and ministers of health of these countries was performed.

All received papers were sent for review and assessment to specific commissions

consisting of experts in the above-mentioned 10 subjects.

In order to assign experts in each field contacts with religious scholars, jurists and specialists in various fields of medicine were made and also experts in forensic sciences from other organizations were invited. Sessions were held in order to review and assess the papers, and selecting them to be presented in the congress.

The report on activities of International Relations Committee

This committee consisted of 3 persons, began its activities 6 months before the date of the congress. These activities included:

1- Preparing and sending a letter in order to attract the support of international organizations and societies (such as WHO and ISESCO), which contained general explanations about the congress and its objectives, and also an estimate of costs.

2- Sending a formed letter to scholars and experts about the congress and its topics. In this letter, all these scholars were asked to considering the importance of holding this congress, send their views and papers on the mentioned subjects to the secretariat of the congress. In the process, as many as 12000 scholars and

The draft final resolution of the First Islamic Countries Forensic Medicine Congress

Under auspices of God almighty and following the successful holding of the first Islamic Countries Forensic Medicine Congress, official representatives of Legal Medicine Organizations of Islamic Countries and the experts and professors participating in this congress,

Appreciating the initiative of the Iranian Legal Medicine Organization in organizing and holding the congress and its hospitality towards the participants,

Emphasizing the strategic importance of issues addressed in the First Islamic Countries Forensic Medicine Congress. And follow-up of scientific achievements of specific commissions and long-term goals of this congress,

Do agree with the following:

1) The first ICFMC delegates agree to create a medical scientific association which is called Islamic Organization of Forensic Medicine (I.O.F.M.) to follow-up the objectives of this congress through studying, planning and coordination.

2) The participants selected Tehran as the permanent location of the secretariat and Dr. Sayyed Shahabeddin Sadr as the secretary general of the organization and all representatives of other forensic medicine organizations and institutions of other countries participating in the congress are considered founding members of this organization.

3) In addition to Forensic Medicine Organization, representatives of ministries of health and judiciary branches of Islamic countries can become members of the organization.

4) Societies, scientific associations and NGOs and also physicians and experts of related fields and religions scholars from shia and sunni can become honorary/affiliated/observer or consultant members of the secretariat.

5) Financing the administration of the secretariat will be the responsibility of member countries.

6) The secretariat will be responsible for follow-up of objectives and results of discussions of the congress of Islamic Countries' Forensic Medicine and planning of future congresses.

7) The Islamic Countries' Forensic Medicine Congress will be held every 2 years.

8) In the final day of the each congress the venue of the next congress will be selected from among the venues suggested by volunteer member countries of the congress.

9) The second Islamic Countries' Forensic Medicine Congress will be held in Jordan on 2006.

10)The objectives of the secretariat of the IOFM include

a. Creating coordination and exchange of ideas on important scientific, jurisprudential and Forensic problems and challenges of Islamic Countries in the field of Forensic medicine.

experts in this field were identified during a comprehensive search and letters of invitation and call for papers were sent to them via e-mail. Approximately, 3000 replies, including paper abstracts or different excuses for not attending the congress, were received.

3- A similar letter was sent to 900 of European scholars in Forensic Medicine, of which 30 replied and sent their papers.

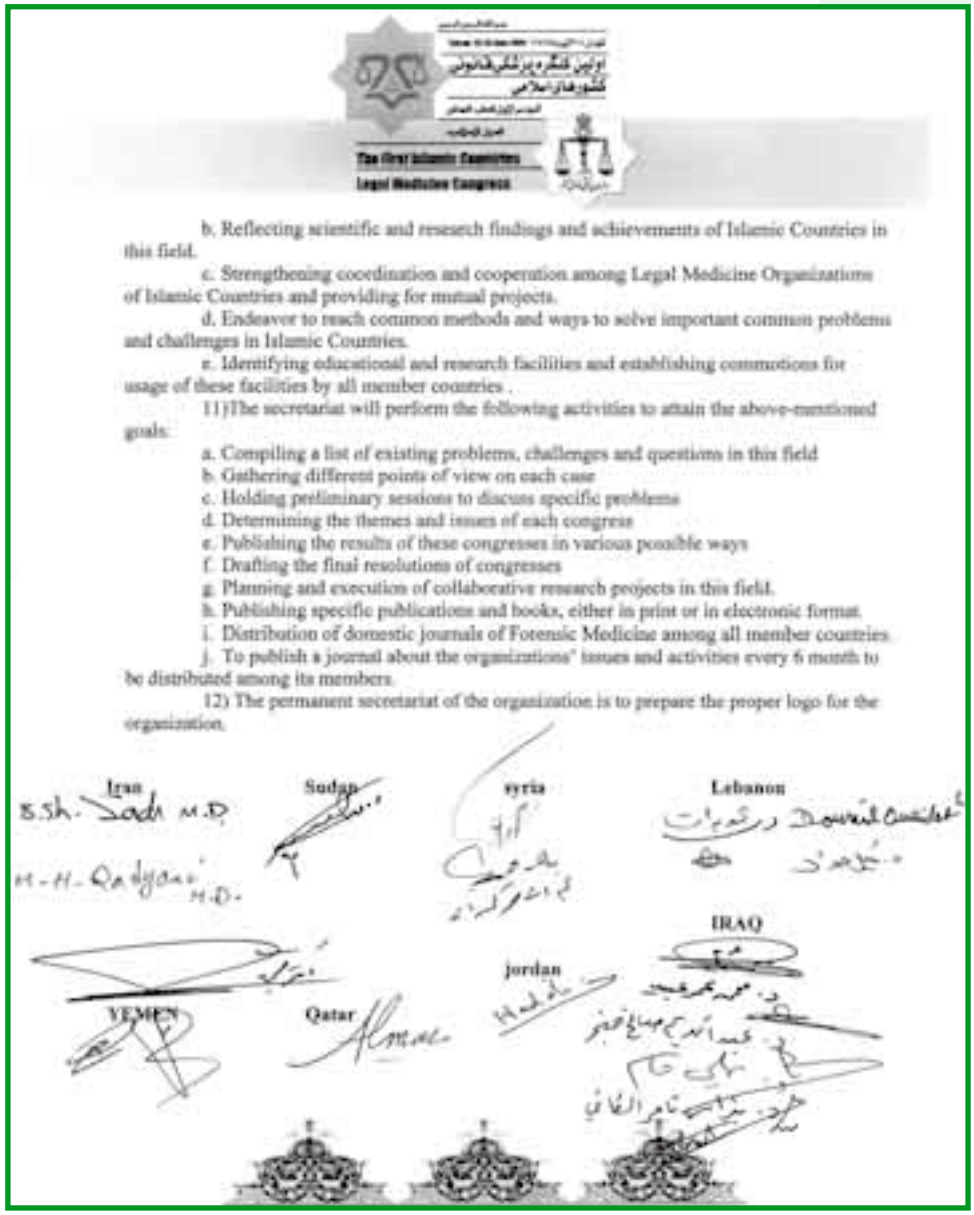
4- An official letter including request for a presentation about the legal medicine system in Islamic countries was sent to the heads of their organizations, in which they were also asked to send the relevant information to the secretariat of the congress.

5- After comprehensive review and evaluation by the scientific committee, nearly 50 papers, among 150 papers from countries other than Iran, were selected for presentation in the congress.

6- In the next stage, to facilitate the process of getting visa, the scientific committee, in cooperation with the ministry of foreign affairs, provided official forms to these who were invited to attend the congress from other countries.

7- For those who were invited and also their papers were accepted, a formal letter of acceptance was also sent.

8- A trilingual (Farsi, Arabic and English) website (URL: http://icfmc.org) was prepared and uploaded, to provide necessary information about various aspects



b. Reflecting scientific and research findings and achievements of Islamic Countries in this field.
c. Strengthening coordination and cooperation among Legal Medicine Organizations of Islamic Countries and providing for mutual projects.
d. Endeavor to reach common methods and ways to solve important common problems and challenges in Islamic Countries.
e. Identifying educational and research facilities and establishing commotions for usage of these facilities by all member countries .
11)The secretariat will perform the following activities to attain the above-mentioned goals:
a. Compiling a list of existing problems, challenges and questions in this field
b. Gathering different points of view on each case
c. Holding preliminary sessions to discuss specific problems
d. Determining the themes and issues of each congress
e. Publishing the results of these congresses in various possible ways
f. Drafting the final resolutions of congresses
g. Planning and execution of collaborative research projects in this field.
h. Publishing specific publications and books, either in print or in electronic format.
i. Distribution of domestic journals of Forensic Medicine among all member countries.
j. To publish a journal about the organizations' issues and activities every 6 month to be distributed among its members.
12) The permanent secretariat of the organization is to prepare the proper logo for the organization.

Iran
Sudan
syria
Lebanon
IRAQ
jordan
YEMEN
Qatar

of the congress.

9- Some of the guests expressed their opinions on the event, which is reflected in the form of an index to this collection.

The Congress

The First Islamic Countries Legal Medicine Congress was held in Tehran, from 23 to 25 June 2004 by Legal Medicine Organization of I.R.Iran, and heads and directors of legal medicine organizations, policy makers, specialists of forensic medicine, jurists and scholars from 40 countries participated in it.

The congress was welcomed by experts and specialists at home and abroad, and in addition to forensic medicine specialists, experts in other fields of medicine and other disciplines (such as law and jurisprudence) showed considerable interest in it.

The congress was divided into four parts including:

- Meeting of official representatives of legal medicine organizations of Islamic countries.
- Presentation of papers and lectures,
- Specialty commissions,
- CME (Continuous Medical Education) panels

During the congress common and controversial problems such as Brain Death, Abortion, Mulct and Blood money, Organ Transplantation, Assisted Reproductive Techniques, Cloning and Medical Ethics were addressed.

Specialists and experts from I.R.Iran, Syria, Saudi Arabia, Uzbekistan, Tajikistan, Qirqizistan, Jordan, Qatar, Kuwait, Algeria, Yemen, Malaysia, Indonesia, Australia, Azerbaijan Iraq, Sudan, Tunisia, UK and India participated in this congress and a total of 350 papers from abroad were received by the secretariat.

Other organizations and bodies contributing in the congress include: Great Tehran's Medical Council, I.R. Iran's Eye Bank, the Cultural Organization of Tehran Municipality, Department of Education of the Judiciary, Department of International Relations of the Judiciary, the High Council of Judicial Development, Ministry of Foreign Affairs, I.R.Iran's Police Force, the Is-

lamic Culture and Relations Organization, the World Assembly of AhlulBait (AS), and the World Assembly for Convergence of Islamic Faiths.

The Opening Ceremony

In the opening ceremony of the First Islamic Countries Legal Medicine Congress, participated by Ayatullāh Hāshemi Shāhrūdi and a host of Iranian and foreign guests, Ayatullah Shāhrūdi and Dr. Sadr, chairman of the congress, delivered their speeches.

Ayatullāh Shāhrūdi, honoring the memory of Shahid Beheshti, the founder of the Judiciary, mentioned L.M.O.'s significance and status, and said: «Achievements of scholars, scientists and experts who participate in this congress will be of use and help to our judicial system and also other scientific legal and jurisprudential circles».

In the final part of his speech, the head of the Judiciary, whished success for organizers and participants of the congress, and said: «These discussions should be so directed to have applicability and result in scientific outcome, to reach new methods for providing a better service, faster detection of crimes, and more useful expertise to solve the public's problems in those fields that are seen to be related to principal duties and authority of LMO, and by extension the Judiciary. These discussions should have practical outcomes for Legal Medicine Organization and the Judiciary and lead to utilization of experience and methods used by advanced countries.»

Before that, Dr. Sayyed Shabuddin Sadr, the chairman of the congress gave a speech

and after welcoming the guests mentioned that preparations for holding the congress had begun 15 months ago. He also thanked the head of the Judiciary for his presence and guidance and also other high ranking authorities, members of parliament and officials of various national institutions and guests.

Dr. Sadr said that the warm welcome by all colleagues and scholars was a cause of confidence and hope for the organizers of the congress and expressed his hopes about «continuation of this kind of gatherings and its topics to be further discussed in sessions of scientific commissions.»

He mentioned that the main objective of this congress was to deliberate on problems and challenges faced by legal medicine organizations in Islamic countries, and added that: «The topics selected for this congress can be seen as the first step toward that goal.»

Dr. Sadr mentioned the exchange of ideas and experiences among various countries as another objective of the congress and stated that: «My hope is that the congress will be a starting point for cooperation among legal medicine organizations of Islamic countries within the framework of OIC, which will cause further convergence and closer relations between them, and bring about greater power and influence for Muslims and the world of Islam.»

About the topics selected for the congress, its chairman said: «The 10 topics selected relate to problems which are of importance by different degrees in different countries, and in particular Islamic ones.

Mulct and blood-money (compensation for mental and physical harms), abortion, sex change, brain death, cloning, autopsy, organ transplantation, medical ethics and new methods and technologies in the field of forensic medicine are from one point of view, general subjects in medicine and from another point of view social and political matters, while from still another view point they relate to forensic medicine. Therefore, various scientists and scholars are invited and these problems will be examined from various points of view.»

Finally, Dr. Sadr, mentioning the importance of these common and serious problems, emphasized: «These topics require that discussion proceed on the basis of a regular program and the commissions continue their work. These gatherings should be repeated and we are ready to reconvene this congress in a proper theme in our country, and also willing to engage in full cooperation with all dear guests from various countries in the fields of mutual interest.»

It should also be mentioned that in a message to the participants of the congress, he had said: «Legal medicine in Islamic countries, in addition to medical and legal aspects, has a religious aspect, which is vastly influenced by ethical teachings and religious precepts derived from divine revelation. Although there are fundamental differences in sources of Islamic jurisprudence, law and medicine and their divergence in common problems is not unexpected, re-identification and convergence of these three approaches is a necessity and will be useful.»

In the next part of the opening ceremony, Dr. Ghadyāni, the secretary of the congress, in a brief speech informed the audience that 348 papers were received (227 form Iran and 121 from other countries) by the secretariat of the congress, of which 100 were chosen for oral presentation (50 from Iran and 50 from other countries) and 30 for poster presentation, and 8 specialized panels are to be held in the main and other halls of the center.

Program of the Congress

The program of the First Islamic Countries Legal Medicine Congress included meetings of heads of legal medicine organizations from various countries, scientific sessions and side-events.

The meetings which were held formally or informally in the margin of main sessions between officials and experts of forensic medicine of different countries, in addition to familiarizing the participants with each other and their respective countries, resulted in initial agreements for establishing an international association of legal (forensic) medicine specialists of Islamic countries.

Scientific sessions and CME panels began simultaneously and continued to the last day of the congress.

Presentation of papers took place in the main hall and involved oral presentation of 100 papers selected, among near 350 papers submitted to the secretariat from Iran and other countries, by the 7 specialized commissions of the scientific committee.

Specialized Commissions

Another part of the congress devoted to 7 specialized commissions, was held in other halls of the center.

CME Panels

Include panels with credit for participation, with subjects such as legal teachings in orthopedics, ENT, internal medicine, surgery, psychiatry, anesthesiology, gynecology and obstetrics.

Side – Events

1. Tours

Including participation in Friday Prayers of Tehran, a visit to Imam Khomeini (RA)'s house in Jamārān, and his shrine near Behesht Zahra.

2. LEMEX Exhibition

In the side halls and corridors of IRIB's center for International Conferences, near the main hall, an exhibition on new technologies and equipments of diagnostic laboratories related to forensic medicine was held .

In the first day of the congress, a panel was held participated by Mr. Kāviāni, manager of LMO's procurement office, members of procurement committee of LMO, and representatives of the companies, to discuss about needs, capacities, legal bases and new methods of utilizing medical, laboratory and radiological equipments and instruments in forensic medicine. According to our guests from other countries, this exhibition was a unique feature of this congress, since no such exhibition is held in other similar congresses.

The Final Document: Tehran, the Islamic World's Center for Legal Medicine

Considering the necessity of continued scientific relations and exchange of information among Islamic countries in the field of legal medicine about the existing challenges, I.R.Iran offered a proposal for establishing a permanent secretariat for the Islamic Countries Forensic Medicine Congress, which was discussed in the last day of the congress in a meeting attended by the heads of Legal Medicine Organizations and representatives of all participating countries and was welcomed by them. It was suggested by representatives of Jordan, Egypt, Tunisia and Syria, that considering the fact that the existing challenges will continue and new problems will be added to them in the future, it is better to follow the activities of this secretariat in the format of an association consisting of representatives of legal medicine organizations of Islamic countries, which was ratified unanimously. The heads of Legal Medicine Organizations of Jordan and Tunisia proposed that since the first congress hosted by I.R.Iran was well - organized and fruitful, the association be headed by Dr. S.Sh. Sadr, the head of Legal Medicine Organization of I.R.Iran and its permanent secretariat be located in Tehran, which was also approved by the audience.

Finally, a resolution was prepared on the basis of suggestions of the participants and signed by all of them. Jordan was determined as the venue of the next congress which will be held in 2006.

The Titles of Selected Papers

1. Ethics Teaching to Medical Students: The Experience of New Medical School. Abdolmoneim Hussein A.
2. Investigation of Vehicle Accidents And Their Organic Injuries of Patients Calling on Tir 7th Hospital in Winter 81 and Spring 82.
3. An Evaluation of the Prevalence of Those Who Came to the Examination Units of the Forensic Medicine Organization in Tehran During 1381 and 1382. Aghakhani K, Mahdavi AM.
4. Study of the Distribution and Frequency of Forensic Medicine Specialists in Iran in 1383. Aghakhani K, Kiani M.
5. Ethical Issues in Modern Medical Treatment and Research: An Islamic Perspective. Ahmed AF.
6. Quality Control in Forensic Laboratories. Akbari MH.
7. Scientific and Organizational Aspects of the Identification of the Missing Dead Following Armed Conflict. AL Khalifah B.
8. Caring for Terminally Ill Muslim Patients. Al-Shahri M.
9. Values, Qualifications, Ethics and Legal Standards in Arabic (Islamic) Medicine. Arshad M.Sh, Allami Sh, Ajtouni KM.
10. The Physical Changes of Human Puberty. Azizi F.
11. Role of Different Factors in Determining Transplantation Priority in Cirrhotic Patients Waiting for Liver Transplantation in Imam Khomeini Hospital from 1380 to 1382. Azmoodeh ardalan F, Saleki S, Hesami H, Jafarian A, Nasiri Tusi M, Ahmadinejad Z, Salehi M.
12. The Basic of Homicide Blood Money. Baghani A.
13. Prevalence of Dental Injuries in Referred Pa-

tients to Dentistry Department of Legal Medicine Organization. Barooni S, Bazmi S, Delirrad M, Arad H.

14. Non-Heart Beating Organ Donation - Can We Balance Duty of Care, the Law and Recipient Need? Bell D, Andrew R, Bodenham AR.
15. Legal Medicine (In Islamic Philosophy and Laws). Biazar Shirazi A.
16. Assessment of Anosmia in Patients With Post traumatic Anosmia (PTA) Using Spect Scan. Borghei SH, Borghei SP.
17. The European Protocol on Organ Transplant: Key ISSUES. Byk C.
18. Investigating Various Stages of Puberty in Tehranian Boys and Its Comparison With 15 Years of Age. Daneshparvar HR.
19. Specialties and Characteristics of a Moslem Physician. Dibaei A.
20. Application of Nuclear Medicine in Brain Death. Eftekhari M, Fayyaz AF, Sadeghi R.
21. Rules and Legal Effect of Embryo Donation. Gholamhossein E.
22. Neurobehavioral Effects in Workers Exposed to Cyanide. El-Azimsa, Selim AA, Ghaleb SS.
23. New Methods in Identification of Corpse. Emam Hadi MA, Aghabeigloee A, Abedi MH.
24. Significance of Genotyping of Viruses Using Molecular Technologies for Identification of Individuals in Forensic Medicine. Esmaeelzadeh A.
25. Blood Money and Medical Expenses. Farahzadi AK.
26. Medico Legal Aspects of Torture Brachial Plexus Injury in Egypt. Fouda MA.
27. Gastrointestinal Side-Effects of Alcohol. Ghadiani MH.
28. Carcinogenicity of Piperonyl Butoxide in Rats. Ghaleb SS, Ahmed EEK, and Ali AA.
29. «OPIOMA» Rhinolithiasis an Unusual Nasal Mass: A Case Report. Ghanbari H, Farhadi M, Daneshi A.
30. Jurisprudence View Points About Abortion. Al Ghaeni MMH.
31. Forensic Medical Service of the Republic of Uzbekistan. Giyasov ZA.
32. Abortion From the Viewpoint of Religious Jurisprudence. Hadavi Tehrani M.
33. Pellet Embolization to the Right Ventricle; Rare Jugular Vein Origin Pellet Penetration. Haghighat Panah MR.
34. Organ Transplantation and Brain Death from Islamic Point of View. Haghighi Z.
35. Right of Access to Medical Records for Patients in Different Countries. Hajavi A, Fozoonkhah S.
36. Organ Transplantation. Hashemi F.
37. Grafting the Member Which Is Amputated By A Julicial Order. Ayatollah Hashemi Shahroodi.
38. Genetic Science Usage in Forensic Medicine. Hassanzadeh M, Ghomri AR, Moghimi B, Najmabadi H.
39. Aobrtion. Hejazi A.
40. Plethysmographic Assessment of Incarcerated Nonsexual Offenders: A Comparison with Rapists. Howes RJ.

41. Age Estimation of Malawian Adults From Dental Radiographs. Igbigbi PS, Nyirenda SK.
42. Intercondylar Shelf Angle in Adult Black Malawian Subjects: A Method for Race and Sex determination. Igbigbi PS, Ngambi TM.
43. Mercury and Heavy Metals. Korkusu IZ.
44. Collaboration Between Police and Legal Medicine Organizations in Earch of Computer Crimes and Their Roles. Jahani M, Shirzad H,Malek F.
45. The Role of Forensic Medicine Center to Support Infants in Jordan. Jahshan H.
46. Evaluation of Child Toxicity in Children Referred to Emergency Department of Loghman Hakim Hospital From May 2000 to 2001.Joghataei H, Mousavi SH.
47. Organ Transplantation and Medical Ethics: An Islamic Perspective. Kaadan AN.
48. Standard Death Certificate and Information Registration Guidelines.
49. The Eye Bank of the I.R. Iran. Javadi MA.
50. Evaluation of the Frequency of Road Accidents Referred to the Dissection Hall of the Iranian Legal Medicine Organization During the First Six Months of 1381. Kadkhodai A.
51. Legal and Ethical Aspects of Human Cloning. Karami A.
52. Patterns of Assault: Experience From an Urban Hospital Based Study in Iran. Karbakhsh M, Zargar M, Reza M, Moez Ardalan K.
53. Legal Aspects of Erectile Dysfunction in Egypt. Kardawy MH, Ali AM.
54. Jurisprudence and Lawful Evaluation of "Sex Reversing". Kariminia MM.
55. Anthropometric (Cephalic Indices) Study in Trainable Mentally Retarded Boys. Karimipoor M, Poorheydar B, Booshehri B.
56. Use of Entomology in Forensic Medicine. Kasiri H.
57. Sex Change Operation. Karrazi SM.
58. A Talk in Dissection Rule. Kharrazi SM.
59. The National Committee of Mulct and Blood- Money in Legal Medicine Organization.
60. Organ Transplantation in Iran, New Horizons, Facing Challenges. Kiani M, Gharehdaghi J, Larijani B, Zahedi F.
61. Ethical Issues of Cloning and Stem Cell Research. Larijani B, Zahedi F.
62. A Review of Various Types of Dissections and Religious and Legal Opinions on It. Mahmoodian A.
63. Some Forensic Medical Aspects of Suicide. Makhsumkhonov KA, Giyasov AZ.
64. A Research on the Age of Pubery. Mar'ashi SH.
65. Ethical and Legal Issues in Organ Transplanation - Indian Scenario. Matiharan K.
66. Maturity and Growth. Maybodi MF.
67. Incidence of Suicide Among Teenagers and Young Adults in the Transkei- South Africa. Meel BL.

68. The Development of Legal Medicine in Albania. Meksi S.
69. Organization, Development and Early Results of a Heart Transplant Program: The Imam Khomeini Hospital Experience. Mirkhani SH,Salehi M, Satarzadeh R, Seyfi S, Soleymani A, Nozar Y, Pourhoseini P, Ahmadinegad M, Sanatkar M.
70. Role of Psychologist in Analysis of Crime Scene. Mirzamani SM.
71. Artificial Fertilization. Mohammadi Hamedani A.
72. Abortion and Its Precepts. Mohammadi Hamedani A.
73. On Permissibility of Organ Transplantation From One Human Being to Another. Momen M.
74. Dieh (Blood Money), Arsh (Mulct) and Government. Montazeri.
75. Human Cloning and Related Moral Issues. Morovvati S.
76. Introduction of a New Method of Extraction SPME and Report of the First Case of Its Application in Extraction of Drugs in Corpse.Mossaddeq M, Richardson T, McClore J.
77. Medical Ethics, Keeping Patients' Secrets, Honesty and Its Benefit for Both Patients and Doctors. Naghizadeh Z, Vaziri A.
78. Introducing D12S391 Locus as a Highly Valuable and Suitable STR for Forensic Medicine. Namazi H, Nadji M, Lashgary Z.
79. Medico-Legal Aspects of Nasal Fractures. Naraghi M, Borgheri P.
80. A Clinical Survey of Undiagnosed Patients of the Intensive Care Unit of Loghman Hakim Hospital in 2002. Nateghifard F.
81. Forensic Psychiatry in Turkey. GÎkhan O, SÏheyla A, Enise A, Gamze K, Nuray C, Keramettin K.
82. Postmortem Drug Redistribution. Pounder JD.
83. The False Memory Syndrome Claim. Pridmore S.
84. Post Traumatic Stress Disorder, 2004. Pridmore S.
85. A New Sex Determinant at the Proximal End of Femur. Purkait R.
86. Importance of Forensic Sciences Training in Nursing Faculties and Design of Forensic Nursing Periods in Islamic Countries. Rahbar Taromsari MM, Urangpoor R, Zarkami T, Palizkar M, Musavian Roshanzamir SA.
87. Evaluating Patients Poisoned With Rice Tablet at Rasht Razi Hospital. Rahbar Taromsari MM, Urangpoor R, Zarkami T, Palizkar M, Musavian Roshanzamir SA.
88. A Look at the Juridical Principles of Organ Transplantation in Our Great Leader's Comments. Rahmani M.
89. Legal and Jurisprudential Review of Human Cloning. Sadeghi M.
90. The Rules and Effects of Artificial Reproductive Techniques. Sadeghi Moghadam MH.
91. Legal Value of Rigiscan Monitoring, Color Duplex, Doppler Ultrasonography and Nocturnal Penile Tomescence

(NPT), Cavernosography and Dynamic Cavernosometry in Diagnosis of Erectile Dysfunction. Safarinejad MR, Fayazi AF.

92. A Review of the Most Common Causes of Mortality and Morbidity Following Anesthesia Due to Medical Error. Saghafinia M.

93. Effect of the Month of Ramadan on Interpersonal Violence. Sanaie-zadeh H, Aghakhani K.

94. Review of Titles and Contents of Published Paper by Islamic Countries in the Famous Forensic Medical Journals. Sanaeizadeh H, Aghakhani K, Kiani M.

95. The Complementary Roles of Judge and Physician in Determining Injury and Human. Savadkohi Far S.

96. Manifestations of Mulct in Pre-Islamic Laws. Samadi Rad B, Seif Farshad AA.

97. Comparative Evaluation of Microscopic and Macroscopic Lesions of Liver in Postmortem Healthy and IV Drug Abusers. Shahriari R, Habibi MR, Gharedaghi J, Gorbani M.

98. How to Decrease Illegal and Unhealthy Abortions. Shamshiri Milani H.

99. Study of Self Mutilators Referred to Legal Medicine Organization of Tehran and Qazvin. Sharafati S, Valizadeh B.

100. Allegation of Professional Negligence in Medical Practice- Indian Scenario of a Global Problem. Sharma BR, Manisha G, Correspondence: DR. BR. Sharma, India.

101. Transplantation of Human Organs VIS-A-VIS Moment of Death. Sharma BR, Gupta M.

102. A Comparison Between Personality Traits of Individuals With Gender Identity Disorder and a Normal Group. Shayan HR, Motaghed M, Gharaei B.

103. UK Perspective on the Forensic Pshychiatry. Sobhan YS.

104. Brain Death and Organ Transplantation. Tabatabaie SA.

105. Self From Spirit to Gene. Tabei SZ.

106. Forensic STR Technology has Wider Application: Individual Identification, Phylogenetic Reconstruction and Chimerism Monitoring. Talwar S, Agrawal S, Khan F, Pandey AK, Tripathi M.

107. A Review of 319 Cases of Death Due to Electrical Shock Referred to LMO From 1374 to 1379 A.H. Tawfiqi H, Jafari G.

108. The Necessity of Medical Entomology in the Iranian Legal Medicine Organization and A Summary of Research Activities in this Field. Tirgari S, Towfighi H, Zarrabi M, Zarrabi SH, Nazparvar B.

109. The Application of SPME/GC-MS In Coronial Investigations Involving Volatile Substance Abuse. Tranthim Fryer OR, Hansson RC.

110. Physician- Pharmaceutical Industry Interaction: Changing Dimensions and Medical Ethics. Verma SK.

111. Life Passage and Fate of Embryo. Yazdi M.

112. The First Report of Organ Transplantation From Brain Death in Isfahan. Ziaei J, Ghadipasha M.

Interviews with Guests of the Congress

Reporters from various Iranian newspapers and magazines in several interviews with foreign guests of the congress, sought their opinions about the congress, Legal Medicine Organization in Iran and their own countries and other related issues. Parts of these interviews follow

Dr. Mostafa Al Fouda, Deputy of the Minister of Justice and vice- chairman of the Legal Medicine Association of Egypt.

Dr. Al Fouda, in response to a question about the level of forensic medicine in Iran, said: «I had not thought that I would see such an advanced level of forensic medicine in Iran, I thought that medicine in Iran is in an ordinary level, but after coming to participate in this congress I noticed Iran's advanced status in this field. Dr. Sadr, had been very careful in selection of topics and hence they are very up-to-date. In particular, since religious scholars from Hawzah were invited to express their opinions on medical questions and offer Islam's view in this regard.»

About forensic medicine in Egypt, Dr. Fouda said: «There are two areas of activity in forensic medicine in Egypt, universities and the Ministry of

Justice. There are 18 universities that train forensic medicine specialists and technicians. On the other hand, we have 250 forensic medicine specialists in our country, 80 of which are women. We have 300 forensic medicine labs throughout the country. In provinces, legal medicine centers act locally and we help them through the Ministry of Justice and Legal Medicine Organization's Central Office.»

About equipments of forensic medicine centers in Egypt, he said: «Forensic medicine in Egypt is very advanced, and it is enough for the Islamic world that one of its children, Dr. Ahmad Zwaid, from Egypt, has won the Noble prize for chemistry in 2001. He got this prize for identifying the speed of chemical reactions, and I should mention that many of our equipments, specially for toxicological investigation, are modern and technologically advanced. From what I heard in the congress, Iran and Egypt are in this regard at the same level.»

Dr. Fouda's opinion about consequences of the congress was that: «This congress has very significant outcomes. One of them is improvement in relations between Iran and Egypt, and also Iran and other Islamic countries. As you know, Iran and Egypt are both among the largest Islamic and Middle eastern countries, in terms of population, area, and technological progress. Cooperation between these two countries is very beneficial for the world of Islam. The congress is also a significant step toward better relations of Islamic countries, with regard to information transfer and exchange of educational scholarships and specialists.»

About the scientific level of the congress, he said: «In terms of coordination, organization and selection of topics, its level was very high. What was discussed was up - to - date and it showed that this meeting contains new information which is a sign of Iran's advancement.

Holding this congress and suggested subjects of it was really a cause gratitude for us, and we express our thanks from I.R.Iran for holding this congress in such a high level. We also thank scholars of Qom's scholarly Hawzah, for their creative approach and their jurisprudential knowledge is an honor for all Muslims. I never thought that Shi'a scholars would be so well- informed and knowledgeable that can help humanity to meet the challenges of our times and serve human - beings. And now I hope that the organizers of this congress would include several scholars, of both Shi'a and Sunni faiths, in the council of the congress to help medical authorities by offering their juriesprudential views on various problems in this field.»

He added: «In my opinion the core of both Sunni and Shi'a faiths is the same, and differences are not too great to cause division and conflict. These differences may even cause both faiths to serve humanity and Islam. Today we went to the Friday prayers of Shi'a people. No problem arised, just like when I go to Shi'a mosques in Egypt, since I feel not like a stranger because of my spiritual relation with Ahlul Bait, which have created a sense of brotherhood among Muslims.»

Dr. Zainuddin Giasov, the head of Legal Medicine Organization of Uzbekistan:

Dr. Giasov said about the activities of legal medicine centers in his country: «The central office of legal medicine organization of Uzbekistan is located in the capital, Tashkent, and every one can refer to it. Other than that, there are 9 medical schools in Uzbekistan and each of them has a legal medicine department, in which specialists are trained. There are 4 medical schools in Tashkent, and we have more than 400 forensic medicine specialists in Uzbekistan.»

He also said: «Legal Medicine Organization in Uzbekistan is sub ordinate to the Ministry of Health, and acts on the basis of laws related to various fields of its activity. All other branches are under supervision of the central office and their diagnoses should be approved by it. Our Organization tries to find the causes of death of people, and of course performs every other test requested by the legal system. »

He expressed his gratitude for establishment of the Association of Legal Medicine Organizations of Islamic countries and said: «I hope that Uzbek specialists in forensic medicine can have an active correspondence and relation with this Association, and I declare that they are ready to cooperate in this field with their counterparts in all Islamic countries.»

An interview with Dr. Yasser Safi Ali, head of Syria's Legal Medicine Organization

Would you please introduce yourself?

Before that I would like to express my thanks to the organizers of the congress and specially the officials of I.R.Iran's Legal Medicine Organization. I am Dr. Yasser Sāfi Ali, head of Syria's Legal Medicine Organization. We have established the Union of Arab Forensic Medicine Specialists, which is now directed by me as Syria's representative. We have held several meetings and seminars in this field, the last of which was held two months ago in Syria, and I.R.Iran had a very active participation in it, in particular Dr. Sadr's lecture that played an important role in its success.

Would you explain a bit about your activities?

If we are to speak about forensic medicine in Syria, specially, and in Arab countries, generally, since 50 years ago, I have to say that we had a lot of ups and downs. I got my Ph.D in forensic medicine from france in 1992 and since 1994, in cooperation with ministries of health and higher education, we established a department in the university of Damascus devoted to training medical doctors in forensic medicine.

We are now in a better condition in this regard, since we hold an annual examination to test our trainees, in theory and prac-

tice, and those who cannot pass this examination must repeat the course.

How is the structure of legal medicine in Syria?

A doctor who becomes a specialist generally offers his/her services in public, rather than private, conters affiliated with ministries of Justice, Interior, Higher Education and Health.

It means that its activities are supervised by the Ministry of Health?

At present we have set up a committee to arrange these matters, with representatives from ministries of justice, higher education, health and interior, in order to regulate the activities of private hospitals and even clinics. We want for legal Medicine Organization to be independent and able to offer its services through various methods to people who need them.

How beneficial do you see such congresses?

Such congresses are beneficial for both their organizers and participants. Exchange of ideas, sharing experiences, and acquaintance with our fellows from other Islamic countries, will help us to better our services to our communities. This is a sign of effectiveness of these conferences. They also make solutions for existing challenges available to us.

My speech in this congress is about effects of other disciplines in forensic medicine.

An interview with Dr. Ahmad Ali, from Egypt

At first please tell us about legal medicine in Egypt.

In Egypt, Legal medicine has four specialized areas, first of which is «field forensic medicine», which deals with murders, crimes and accidents resulting in death. The next is psychiatric medicine, which in fact is consulting with the accused of crime cases after the event, and can be considered a medical analysis.

What stages should the students of forensic medicine pass?

In fact, they have to first take their M.D. and then pass through a six month specialty course and then work for 2.5 years to get their specialty. There are universities in Egypt that are involved in medical education, nearly 9 universities, and I should add that students go through that 6 month course voluntarily. Only legal medicine organization's staff are involved in forensic and criminal investigations performed on cadavers, and autopsy is seen a medical activity, rather than a criminal investigation.

How many people are active in this field?

There are about 200 specialists of field medicine and 150 specialists of psychiatry.

Are forensic labs governed by universities or the legal medicine organization?

In this regard we have decided to have

specialized labs to perform specific functions, such as pathology, cytology, bacteriology, DNA, etc.

How do you act in relation with medical malpractice?

In cases of medical malpractice, either deliberate or by mistake, a decision should be taken. In Egypt, a judge has to decide that:

1- How serious is the mistake?

2- Is the affliction or harm permanent or transient?

3- What is the main cause of affliction?

What is you opinion about the congress?

I say that it is more than beautiful. It was very good, and since it was the first congress of this kind in Islamic countries. I hope that such attempts will be repeated, and the scholars who have participated in this congress should think about establishing an association to keep them together.

Are you satisfied with the congress' side - events?

In fact I had heard a lot about Iran and in my high school years I had read about your country and imagined about it. Indeed, all Egyptians like to see Iran, which is a unique country in terms of history of civilization and its scholars, either in the past or now, have been among its advantages. When I came to Iran and saw it with my own eyes, I was really astonished. Iranians are a great nation, with a real civilization. I wish them success, and for this congress.

An interview with Dr. Ali chadli, chairman of the Mediterranean Academy of Forensic Sciences (MAFS)

Would you please introduce yourself?

Ali chadli from Tunisia, forensic medicine specialist and chairman of MAFS

Can you explain about MAFS and its activities?

As chairman of MAFS, I am in charge of coordinating among mediterranean countries in this field. We hold classes for training the students interested in forensic medicine, and have participants from all over the world.

We would like to know more about this coordinating activity?

That is a system in which we have one or two representatives from all mediterranean countries. They come together every other year in workshops or congresses, discuss about various topics in the field and report the results to all countries as a contribution to development of human knowledge.

How did you see this congress?

I am very happy that I.R.Iran succeeded in its great attempt to call together such a

big group of scholars. This congress may cause that Islamic countries congregate to hold more similar gatherings. More over, non - Islamic countries can attend these gatherings and help in promoting this field of science in favor of all humanity.

I should say that I am very satisfied with this scientific congress and thank its organizers, particularly because of their warm welcome. I hope that this kind of congresses continue to be held.

What is your idea about establishing an Islamic Organization of Forensic Medicine?

I am completely for it, and it is a very good idea, but we should keep in mind that scientific independence must be observed, and I insist that such a move should not become a cause of dependence whats over.

Did you present a paper in this congress?

I had a speech on the future of forensic medicine in Islamic countries and its challenges, and suggested that MAFS is really interested in having friendly relations with Islamic countries and I hope that these relations will be friendly, rather than strictly formal.

An interview with Dr. Magda Hilal El - Kardawy, undersecretary of Egypt's Ministry of Justice and head of Great Cairo Legal Medicine Center

Would you please explain about forensic medicine's role in your country?

We have worked on field investigations, which is part of forensic medicine. We go to scenes of crime to determine the details like time and date of death or occurrence of a crime. Detecting obscure crimes, autopsy, genetical problems and also medical liabilities are all among our works. Examining prisoners who are suggested to be granted a pardon because of illness (mental or physical) is a duty of field investigation department.

Recognition of such cases as sodomy, rape, or mental sanity or insanity (in claims and counter - claims) and also divorce among Christians (that needs courts' written confirmation) and Muslims (e.g. due to impotence or other problems of couples), are among our jobs.

How did you see this congress?

I am happy that a congress of this scale is being held about forensic medicine, and more so because it is held in I.R.Iran. Honestly, before coming I was a little concerned,

because until now I have never been in Iran, but now I am very happy to be here. I liked to see many more representatives of Islamic countries in this congress, because I believe that the world of Islam must be able to stand on its own feet and solve its problems.

It also makes possible for us to reach a unanimous decision about forensic medicine in Islamic countries, because forensic medicine is not bound by language or geography, but unfortunately, nowadays, every one relies on his/her own understanding, and has a specific approach. We have come from Egypt and the head of our delegation is Dr. Raf'at.

On behalf of my country, I would like to thank I.R.Iran for its excellent reception and hosting. We insisted that Dr. Raf'at, head of legal medicine organization of Egypt, attends this congress, and he has come along with his wife, so we prepared four papers and sent the abstracts of three of them, of which I was the co -author of two, Dr. Mahmoud and Dr. Ayman had worked on two and three papers, respectively.

What is your opinion about establishing an Islamic Organization of Forensic Medicine?

I feel that it is a necessary move. We in Islamic countries, have our own customs and traditions, which are different with those of European and Western countries. They have always been the initiator, why do we not try to become initiators, and in order to close all Islamic countries together we must begin with moves like setting such an organization up. I am happy that I.R.Iran took the first step in this way, and should say that it was a sign of courage.

A Survey on Permits of Therapeutic Abortion in Iran

(issued from Jan. to Dec. 2003)

Abstract:

Background: *Absence of laws regarding legal abortion in cases of fetal anomalies and diseases was a problem that was solved in 1997 with a fatwa issued by the grand leader of Islamic revolution in Iran that permitted therapeutic abortion in cases of major thalassemia. In 2002, Iranian legal medicine organization developed a set of regulations governing therapeutic abortion cases, and eventually it was approved by the parliament in 2005 and be lame a law.*

Methods: *This study was a descriptive, cross-sectional and retrospective one that was carried out by probing in previous records of these cases in legal medicine centers of Iran, the data were transferred to prepared forms and then analyzed by SPSS software.*

Findings: *The results show that from 1011 permits issued in the study period, 64% were for fetuses with diseases and anomalies and 36% for maternal diseases.*

The most important fetal anomalies and diseases were anencephaly and major thalassemia, and the most important maternal ones were cardiovascular diseases. The average of mother's age at time of issuance of permit was 29.4 years and that of the fetus was 12.8 weeks.

Conclusion: *A significant number of those who previously would have use illegal ways for abortion now can resort to legal methods provided in these regulations, which has a positive impact on pregnant women's health. Since this set of regulations is based on Islamic principles and up-to-date medical findings it can serve as a model for other Islamic countries.*

Keywords: *Laws on Abortion; Therapeutic Abortion; Legal Abortion; Illegal Abortion*

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Introduction

Abortion is defined as extrusion of products of pregnancy before becoming viable. Therapeutic abortion means termination of pregnancy prior to ensoulment of fetus to save mothers health or life. In other words, indications of therapeutic abortion include:

1- To save mother's lif.

2- To save mother's health.

3- To prevent a malformed fetus, or one with a life- threatening illness, be born.

4-When the newborn will not be viable. And

5- Selective abortion in pregnancies with multiple fetuses.

Historically, abortion has always been a controversial subject because of its ethical and spiritual aspects and all human civilizations and religions had positions towards it. It was sometimes completely forbidden, in other times it had limitations imposed on it, and in yet other periods completely unlimited. Today there is a significant variety in its positions in different countries and societies. For example, there is no legal way for abortion in Malta, while in Canada there exists nearly no limitation for performing abortion. At present more than 2/3 of the worlds people live in areas where a legal abortion can be requested but a wide range of cultural, religious and economic factors govern the methods of performing abortion. Although is considered a relatively criminal issue, it has gradually become a focal point of discussion in various fields of human leno ledge, including philosophy, ethics, religions, sects, sociology, psychology, and law. In medical ethics probably no other subject has been discussed as much as abortion.

In Iran, before1991, therapeutic abortion was very limited because of cultural and religious inhibiting factors, which had grave social and health-related effects. Upon approval of the law concerning Islamic punishments (1991-2), abortion for saving mothers life before ensoulment of fetus become permissible. Although this law helped in changing the society's view point about abortion, it remained silent in cases of fetal anomalies and diseases. In 1997, in view of serious psychological, social and economic problems of thalassemic babies and their parents, the grand leader of Islamic revolution issued a Fatwa , that permits abortion in cases involving thalassemia major, before ensoulment of fetus, on the basis of permits issued by legal medicine centers. This was a turning point regarding attitudes towards therapeutic abortion. In 2002, the national committee on abortion was set up in the research department of Iranian Legal Medicine Organization to determine indications of therapeutic abortion, which proposed a draft document including 49 absolute indications of therapeutic abortion (e.g. those anomalies or diseases that cause intra-uterine death, upon birth or very soon after birth). This measure was welcomed by medical circles and changed attitudes of authorities and people towards therapeutic abortion as a public health issue, so that in 2005 the Iranian parliament ratified the bill titled "Abortion of Anomalous Fetuses Act".

The present study includes cases that were given permissions for therapeutic abortion during the first year of implementation of the above mentioned law.

Method

This Was a retrospective descriptive cross-sectional study to find the prevalence and main reasons of issuance of permits for therapeutic abortion during the period of implementation of the new code of conduct regarding therapeutic abortion in Iran in 2003. Here, legal abortion following a request by parents or legal authorities requires that existence of a fetal abnormality or life threatening danger for the mother be confirmed by a sonographist and medical specialists and then the permit to perform abortion officially in a medical center provided that the fetus gestational age is less than 20 weeks. To carry out this study all needed data such as fetal age (in weeks), mothers age (in years), reason for request and type of request were gathered through files and recorded requests for therapeutic abortion in legal medicine country and using ready made questionnaires and analyzed by SPSS software (ver 9.05).

Results

In the above-mentioned period 1011 permits for legal abortion have been issued; 394 (%35.8) of which were due to maternal diseases, 704(%63.9) were due to fetal disorders and 3 were due to both. In 542 cases (%2.1) mothers age was between20 and 30 and in 350 cases (%33.6) between 30 to 40, in 83 cases (%8) below 20 and in 64 cases (%6.3) it was 40 or more. Fetal age in 297 cases (%27.3) was 10 weeks or less, in 654 cases (%60.1) between 10 to 16 weeks and in 137 cases (%12.6) between 16 to 20 weeks when the permit was issued.

Cardiovascular diseases were the most prominent causes of giving permission for abortion due to maternal diseases in 112 cases (%28.2), followed by urinary tract and renal diseases with 69 cases (%17.4), CNS diseases with 48 cases (%12.1). malignancies with 31 cases (%7.8) and rheumatic and psychiatric disorders with 25 cases each (%6.3), gastrointestinal disorders with 10 cases (%2.5), pulmonary diseases with 4 cases (%1.0), endocrine disorders with 4 cases (%1.0), hematologic disorders with 2 cases (%0.5), infectious diseases with 2 cases (%0.5) and others with 65 cases (%16.4). Fetal causes included anencephaly in 344 cases (%48.8), major thalassemia in 179 cases (%25.4), meningoencephalocele in 32 cases (%4.5), fetal hydropsis in 31 cases (%4.4), bilateral renal agenesis in 11 cases (%1.6) and holoprosencephaly in 10 cases (%1.4)

Discussion and conclusion:

It is estimated by Teitza that nearly 55 millions of abortion occur all over the world each year, although there are significant differences in reporting location and rate of occurrence and attitudes towards it among different countries. For example in 1979 there has been 69.7 cases of abortion per 1000 pregnancies in Bulgaria and in 1981 the figure in the Netherlands has been 6 per 1000 pregnancies

The mean of mother's age in this study was 29.4 years. Other studies have shown similar figures (28.6 and 30.8) for mother's age.

Given the fact that Iran has a young population educating the youth to prevent high-risk pregnancies should be considered as

an appropriate and useful solution for this problem. In U.S. nearly %51 of all cases of abortion occurs in women who are less than 24 years old.

In 1980 studies carried out in U.S.A had shown that the rate of abortion in women less than 14 and more than 40, was two times more than those between 25 and 29.

It seems that religious believes and socio-cultural differences play an important role in this regard. In this study the mean of age of the fetus at the time of request for abortion was 12.8 weeks (SD=3.8), while in another study it was 10.2 weeks. Considering the fact that abortion permit in Iran can be issued only before the fetus is 4 months old, physicians often refer the patients with such diagnoses to a legal medicine center as soon as possible.

Similar to other studies, in the present study the most important causes for which mothers requested abortion permit included cardiovascular (specially valvular dieases) in 28.2% of cases and renal and urinary tract disorders in 17.4% of cases. Other significant and important diseases in this and other studies in Iran included: CNS disorders (12.1%), rheumatic and psychiatric disorders (6.3%).

In more developed countries these factors had a lower rating, so further research may be necessary.

In this study there is a wide gap between anencephaly (48.8%) and major thalassemia (25.4%) and other fetal anomalies as causes of abortion. They consist nearly 2/3 cases of abortion due to fetal anomalies and about 1/2 of all cases. The number of permits issued for aborting thalassemic fetuses was increased to 2 times of that in 2001.

It seems that epidemiologic studies on these factors in Iran are necessary.

Nearly 1/3 of all permits issued were due to maternal indications. In countries where no severe limitations are posed against abortion, therapeutic abortion to save mother's life or health is rare in comparison with the total number of cases.

About 3/4 of permits issued during the year of this study were those cases considered in one legal medicine center tripled compared with 2002. In fact, the majority of those who requested and were denied the permit for legal abortion and committed illegal abortion, upon implementation of this regulation are legally permitted to perform abortion in necessary cases. Previously there was no permit to abort anencephalic fetuses. A 3 year study (1992-95) in a private hospital in Tehran revealed that form 1115 cases referred for complications of abortion at least 10% were due to illegal abortions.

In USA, the rate of death in pregnant women has declined since 1940, while the rate of deaths due to abortion has had a steeper decline, which was due to legalizing abortion there. Before that the rate of deaths due to infected abortions, especially among women of lower social class was a serious health problem.

Today, paying attention to therapeutic abortion and its indications given the significant advances in medicine and structural changes in human societies has become a necessity in all countries. Since the law concerning therapeutic abortion recently ratified by Iranian parliament,

which is developed considering basic rules of Islam and modern medicine, can serve as an appropriate model for other Islamic countries.

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Postmortem Drug Redistribution

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The sample most commonly used for post mortem toxicology is blood, and the analysis most commonly performed is for ethanol. Tissue samples other than blood may be used for alcohol analysis when blood is not available, because of the condition of the body, or to provide corroborative or additional data for interpretation. For the analysis of therapeutic drugs and drugs of abuse, blood is invariably the sample of choice, but for some poisons other tissues such as liver, kidney or hair may be the optimum samples. In general the purpose of a post mortem analysis for drugs is to determine as accurately as possible the concentration of the drugs that existed in blood at the time of death, in order to assess the likelihood of drug toxicity, and in particular whether the death can be explained by the drug concentration found. Invariably, the blood sample obtained for analysis at autopsy is taken many hours or days after death. During this time interval between death and blood sampling, drug concentrations in blood, and other biological fluids and tissues, may change significantly. This is true for most if not all drugs. The causes of these post mortem drug changes are complex. An increasing awareness of their importance over the past few decades has resulted in significant changes in the way in which blood samples are obtained at autopsy and how

the drug concentrations in those blood samples are interpreted. An understanding of post mortem drug changes underpins both the rationale for the method of post mortem blood sampling for analysis as well as the rationale for the interpretation of the analytic results. Drug and metabolite concentrations in post mortem blood are interpreted by comparison with previously reported concentrations corresponding to therapeutic, toxic and fatal conditions. Pharmacokinetic data obtained from drug studies in living volunteers cannot be applied directly to analytical results obtained from a post mortem blood sample.

Postmortem drug redistribution

Although clinical pharmacokinetics cannot be applied directly to post mortem toxicology it provides a good starting point for an understanding of the most significant of the post mortem drug changes, namely post mortem drug redistribution. Volume of distribution (Vd) is an important clinical pharmacokinetic concept. The Vd is a theoretical volume that does not correspond to any physiological space. It is the hypothetical volume of body fluid that would be necessary if the total amount of drug in the body were distributed at the same concentration as in plasma. The Vd is expressed as litres per kilogram of body weight. For a drug that distributes to plasma only the Vd approximates 40ml per kilogram. A Vd of 160 ml per kilogram implies a drug with extra-cellular distribution only. For a drug that has total body water distribution and can enter cells, for example ethanol, the Vd approximates 640ml per kilogram. Some drugs have an apparent Vd greater than that of total body water and for these drugs tissue depots sequester the high drug concentration. If a drug has a high Vd then this indicates that, in life, it concentrates in tissue depots, such as the liver and the lungs. Following somatic death, the death of the cells of these tissue depots of drug permits passive diffusion of the drug along concentration gradients within the body. Since at death the concentration of drugs with a high Vd is lower in blood than in solid organs such as lung and liver, drug diffuses from the solid organs into blood to raise the blood drug concentration significantly.

Post mortem drug redistribution is the post mortem elevation of drug concentrations in blood as a result of diffusion from drug depots in solid organs. To permit this post mortem diffusion process, factors must come into play that allow for the release of the drugs from their binding sites in the solid organs. These are likely to be complex, physico-chemical changes occurring as part of the processes of autolysis and, later, putrefaction. Changes in pH, the tissue binding characteristics of the drug, and cell membrane integrity are all probably elements. Cell death itself brings to an end any energy-dependent drug concentrating systems. The loss of cell membrane integrity is paralleled by the release of intracellular enzymes from the solid organs into the blood. It is this phenomenon that results in the artefactual post mortem elevation of cardiac myocyte and hepatocellular enzymes. If such large molecules as these enzymes pass rapidly into the blood post mortem, then it is hardly surprising that much smaller drug molecules do so. Post

mortem drug redistribution into blood is well established within hours of death and is typically marked by the time of autopsy which is commonly a day or even two or three days after death.

Drugs are weak acids or bases and in solution they become ionised when they lose or gain a hydrogen ion. The degree of ionisation of a compound depends on both its specific pKa and on the pH of the solution in which it is dissolved, a relationship described by the Henderson-Hasselbalch equation. Since the lipid-soluble form (non-ionised) of a weak electrolyte is the species that crosses cell membranes, organic acids are more likely to diffuse across membranes when they are in an acid environment whereas a basic environment favours diffusion of bases across membranes. In this way drugs become trapped in the compartment in which they are more ionised because ionised (polar) compounds do not easily cross cell membranes. In life, intra-cellular fluid is more acidic than extra-cellular fluid with the result that bases cross the cell membrane and are trapped in the intracellular compartment. One consequence of this relative partition is a higher Vd. After somatic death there is a sharp decrease in blood pH as a result of continuing cellular metabolism with carbon dioxide accumulation until available oxygen is exhausted and then anaerobic metabolism of glucose to lactic and pyruvic acids. In the minutes immediately following somatic death this very rapid fall in blood pH may cause redistribution of some drugs. There is some evidence that significant increases in blood morphine concentration occurring in the minutes after death are a result of the repartitioning of the drug consequent on pH changes.

The solid organs which provide the most significant drug depots for post mortem drug redistribution are those which combine a high drug concentration with a relatively large mass and an association with large blood vessels. The liver, the lungs and the heart are the organs most responsible. Skeletal muscle, although amounting to about 30kg of a 70kg body, tends to have drug concentrations similar to or only a few fold greater than blood. Many drugs concentrate in liver at levels 50 fold or more that in blood. It was for this reason that liver was used historically for post mortem screening for drugs. Drug diffuses from the liver post mortem into the inferior vena cava and thence the right heart, superior vena cava and contiguous neck and subclavian veins. The lungs, in life, receive the entire blood flow from the right ventricle and therefore drug distribution into and accumulation in this tissue is very rapid. Compounds that specifically accumulate in the lungs are basic amines, for example imipramine, amphetamines, methadone and chlorpromazine. These exogenous basic amines are thought to be removed from the blood by the same carrier-mediated sodium-dependant transport systems which remove the endogenous amines 5-hydroxytryptamine and norepinephrine from the pulmonary circulation. For these drugs the lung tissue to blood concentration ratio in life may be as high as 200 and this very large gradient provides the basis for post mortem drug redistribution into the pulmonary vessels and thence the cardiac chambers, as well as directly into the adjacent thoracic aorta.

Cardio-active drugs, such as diltiazem, a calcium channel blocker, and digoxin, are concentrated in the myocardium in life and after death show post mortem redistribution from the myocardium into cardiac blood. The endothelial cells of capillaries heavily concentrate some drugs such as phenobarbital. Post mortem release of drugs from endothelial cells into the blood is potentially very rapid. Certainly endothelial cells are shed into the blood during the first day post mortem.

Post mortem drug redistribution from solid organs into the blood occurs by passive diffusion as described by Fick's first law of diffusion, which states that the rate of diffusion is proportional to the concentration gradient across the diffusion barrier. Although drugs diffuse most readily along the vascular tree within the blood itself, anatomical structures such as the diaphragm and the wall of the aorta do not in practice provide major diffusion barriers. Diffusion is temperature dependent but refrigeration of the body is not a significant factor in the early post mortem period since it typically requires 18 or more hours for the core body temperature to fall to that of the environment, and drug redistribution is well underway within hours of death. However, refrigeration will slow the rate of continuing drug redistribution if autopsy is delayed for days, although this is not of practical significance. Diffusion is time dependent also, and empirical studies on cadavers with repeated blood sampling over many hours shows increasingly dramatic rises in blood drug concentrations.

Movement of drug within the blood is not only a result of diffusion since there is also natural post mortem movement of blood within the vessels providing some physical transport of drugs. These post mortem movements of blood are associated with pressure changes resulting from rigor mortis and putrefactive gas formation. The extent of this post mortem blood flux is also influenced by the degree of fluidity of the blood in the individual case. Following death there is loss of vascular tone in the arterial tree so that blood pools in the small peripheral vessels with a relative emptying of the larger arteries. During the first 24 hours post mortem there is reflux of blood from the heart into the superior vena cava and the associated neck veins as a consequence of rigor mortis involving the heart muscle. With the increase in intra-abdominal pressure, accompanying early putrefaction, there is blood reflux from the abdominal aorta into the thoracic aorta, from the inferior vena cava into the right atrium and contiguous superior vena cava, and reflux from the left cardiac chambers into pulmonary veins. With the resolution of rigor mortis, which is the result of muscle putrefaction, the heart chambers are emptied of blood and there is flow into peripheral arteries with associated slight movements of venous blood. Gravitational phenomena related to body position and the tendency of blood movements to occur along the most linear natural anatomical trajectories are additional features which cause the pattern and extent of blood flux to be highly variable from case to case. In general femoral venous blood can be expected to be influenced least by the post mortem movement and mixing of blood.

Empirical observations on drug poison-

ing fatalities as well as experimental small animal models have shown that there is a common general pattern of post mortem drug redistribution into blood. Lowest drug concentrations are found in blood from peripheral veins such as the subclavian and femoral veins. High drug concentrations are found in blood samples from the aorta, the superior vena cava and the cardiac chambers, and the highest drug concentrations are found in the pulmonary vein and the suprarenal portion of the inferior vena cava. The latter two vessels drain blood from the lungs and the liver respectively. Thus the lowest drug concentrations are found in blood samples from sites distant from the torso which contains the organs in which drugs are most heavily concentrated, while blood samples from the heart or major vessels of the torso have much higher drug concentrations because of their proximity to these organs. This is not to say that the drug concentration in blood from peripheral sites, such as the femoral vein, simply because it is the lowest concentration, is unchanged from the time of death. Rather the drug concentration in peripheral blood is the closest available approximation to the drug concentration in blood at the time of death, but even so may be two or three fold that concentration. The difference in drug concentration between torso samples and peripheral venous blood samples is commonly several fold and occasional ten or twenty fold. The preferred autopsy blood sampling site for toxicological analysis is the femoral vein or the contiguous external iliac vein. Empirical cadaver studies suggest that the subclavian vein, although a peripheral venous site, is less reliable.

Post mortem drug redistribution accounts for the commonly observed fact that drug concentrations in blood vary significantly between blood samples taken at the same time from different anatomical sites in the one corpse. Overall drug concentrations in all blood samples post mortem increase with post mortem interval but the changes are most marked in torso blood samples. Consequently the between-sample variability in drug concentration increases with post mortem interval. Although drug concentrations in peripheral venous blood, particularly femoral venous blood, increase least in the post mortem interval they still do not represent precisely the drug concentration at the time of death but rather the best approximation available. Femoral venous blood is the best available post mortem blood sample, but the best of a bad lot.

Some variability in drug concentrations between blood sampling sites in cases of drug overdose is seen in life. During drug absorption, there is distribution of the drug from the blood to the tissues and this distribution phase lasts approximately 30 minutes to two hours for most drugs. During this period there can be a sizeable difference between arterial and venous drug concentrations and this may be reflected in site differences in post mortem blood drug concentrations where a person has died during the absorptive phase. In both animal models and human case studies of drug overdose, drug concentrations in arterial blood are sometimes as much as twice that of venous blood. This phenomenon may be a contributory factor in causing the post mortem drug concentration differences seen in acute drug overdose deaths, but it has a

relatively minor impact when contrasted with the phenomenon of post mortem drug redistribution.

Post mortem drug analyses are performed on whole blood because post mortem blood clotting and red cell lysis makes it impossible to obtain a plasma sample, the usual matrix for drug analyses in the living. Within an hour or less of death blood clotting is initiated throughout the vascular tree and, at the same time, clot lysis is initiated. The two processes occur simultaneously and the effectiveness of the clot lysis will determine whether the blood at autopsy is clotted, or completely fluid, or partly clotted and partly fluid. As a result the amount of blood clot present in a post mortem blood sample varies from body to body, and varies from site to site within the same body. When fibrin clot is present it always entraps large numbers of erythrocytes, so that the clot is relatively red cell rich. For drugs with an unequal distribution between erythrocytes and serum the proportion of red cells and blood clot in a post mortem blood sample submitted for analysis may influence the drug concentration. For most drugs this is not an important factor in practice. For some drugs, such as chloroquine which has an erythrocyte to serum drug concentration ratio of 32 to 1, the erythrocyte content of the post mortem blood sample might dramatically affect the drug concentration. The blood obtained from limb vessels is most likely to be fluid and largely devoid of clots, reflecting the approximately inverse relationship between the endothelial-derived fibrinolytic activity and the diameter of the vessel from which the blood was obtained. The uncoagulable fluid blood often, but not universally, present in limb veins provides as homogenous a sample for analysis as can be hoped for. Thus far there is no proven correlation between the differences in haemoglobin concentration of post mortem blood samples and the differences in the concentrations of drugs detected.

Stomach contents

Unabsorbed alcohol and drugs present in the stomach at the time of death passively diffuse into surrounding tissues, organs and blood vessels in the post mortem period. Direct diffusion of alcohol, drugs and poisons from the stomach contents through the stomach wall, diaphragm and blood vessel walls to contaminate blood in the cardiac chambers and surrounding great vessels can be a significant problem, particularly with respect to alcohol analysis. It is a further reason to avoid sampling torso blood for the quantitative analysis of alcohol and drugs. Unabsorbed drug in the stomach also diffuses into the adjacent liver. The gastric contact area on the inferior surface of the liver is centred on the left lobe. There is both empirical and experimental evidence that drug levels in the left lobe of the liver may rise significantly post mortem as a consequence of drug diffusion from gastric contents. For this reason a liver sample for analysis should be taken from deep within the right lobe, the site most protected from this effect by distance and tissue mass.

A common autopsy finding is contamination of the airways by gastric contents as a result of agonal vomiting or passive post mortem reflux following relaxation of the oesophageal sphincter at death. Any drugs

or alcohol present in this material contaminating the airways diffuses readily into the blood within the cardiac chambers and the great vessels of the heart including the pulmonary vessels, superior vena cava and aorta. Spurious analytic results for alcohol and drugs resulting from this post mortem artefact are readily avoided by taking the blood sample from a peripheral vein.

Bacterial activity

The bacteria which break down the body tissues during decomposition are also able to degrade some drugs. As a result the concentrations of susceptible drugs in blood may decrease during the post mortem interval. Drug lability to bacterial degradation is related to the presence of one of three chemical structures in the drug. Oxygen bonded to nitrogen but not to carbon or sulphur renders a drug labile. This occurs with nitro-groups bonded to either an aromatic nucleus or to a non-aromatic structure and also occurs with oximes and with N-oxide structures, for example chlordiazepoxide. A second vulnerable structure is sulphur in a chain bonded as a thiono-group (C=S, P=S), for example malathion. The third vulnerable group of compounds are the aminophenols, which have OH and NH2 groups on the same aryl nucleus. Structures possessing a primary aryl amine group, but which are not phenolic or are phenolic but do not possess such an amine group, or have a substituted amine group, for example paracetamol, are all stable. The stability of drugs generally reflects the stability of chemical structures in which carbon bonds with oxygen and nitrogen, nitrogen bonds with hydrogen, and sulphur bonds with oxygen. Sulphur forming part of a heterocyclic ring causes some instability to putrefaction, for example dothiepin and the phenothiazines. The observation that the degradation of these latter drugs is variable suggests that the bacteria capable of degrading them are less widely encountered than those capable of breaking down the other labile chemical structures. While the lability or stability of a drug to putrefactive bacterial degradation may be generally inferred from its chemical structure, anomalies have been observed, for example thiopentone would be expected to be labile but is stable, and bendrofluazide would be expected to be stable but is unstable. Furthermore, a drug with a high volume of distribution and a labile chemical structure can be expected to show post mortem redistribution effects, with increases in blood drug concentration, as well as later putrefactive degradation, with decreases in blood drug concentration, both of which are anatomical site and time variable.

Ethanol is formed post mortem by microbial action. A wide variety of bacteria normally present in the gut, and responsible for putrefaction, can generate ethyl alcohol in blood and other tissues. Also, yeasts such as Candida albicans, may be responsible for post mortem alcohol production. Ethanol synthesis takes place by a pathway opposite to that of ethanol catabolism in the living body. The necessary alcohol dehydrogenase and acetaldehyde dehydrogenase enzymes are provided by the micro-organisms while the carbohydrate substrates, glucose and lactate are present in blood and tissues. The anatomically isolated position

of the vitreous humour of the eye protects it from bacterial putrefaction. For this reason analysis of vitreous humour is useful to corroborate a post mortem blood alcohol and assist in distinguishing ante mortem intoxication from post mortem alcohol production. Urine is similarly useful because it normally contains little or no substrate for bacterial conversion to ethanol, except as a consequence of some pathological abnormality, particularly diabetes mellitus.

Autopsy sampling

In practice post mortem blood samples for quantitative toxicological analyses should be obtained from the femoral vein or the contiguous external iliac vein. Ideally the sample should be obtained as soon as possible after death. Obtaining such a sample at the scene of death is good practice. If the sample is obtained at autopsy then it should be taken at the very start of the dissection. The femoral vein can be exposed through an incision in the groin, or the external iliac vein exposed through the normal autopsy abdominal incision. The blood sample should be obtained by a needle and syringe and not by severing the vessel and allowing the blood to flow into an open container, or to pool in the tissues or pelvis before collection. Prior to taking the sample the vessel must be ligated or clamped proximally, to avoid drawing blood from the immediately contiguous common iliac vein and the inferior vena cava. When a large volume of post mortem blood sample is needed for drug screening, that is to say qualitative rather than quantitative analysis, the sample may be obtained from anywhere. Best practice is to obtain a large volume of torso blood sample for qualitative analysis and a necessarily smaller volume of femoral venous blood for subsequent quantitative analysis. Sequestered haematomas, such as intracerebral haematomas and subdural haematomas, can be analysed for alcohol and drugs, and give an indication of their presence in the body at the time the haemorrhage occurred, information which is useful if there has been a significant survival time. All blood samples should be labelled with their specific anatomical site of origin. Blood specimens should be preserved by adding 2% wt/vol sodium fluoride to the container. This inhibits micro-organism production of ethanol, conversion of cocaine to ecgonine methyl ester by cholinesterases, and enzymatic loss of other esters such as 6-acetylmorphine. Preservatives are generally not required for other specimens.

For the purpose of corroborating a blood alcohol analysis on femoral venous blood, a sample of vitreous humour from the eye together with a urine sample, if the bladder contains urine, should be taken always. Urine is obtained directly from the unopened bladder by needle and syringe. Vitreous humour is obtained by direct aspiration from each eye using a small volume syringe and a needle inserted adjacent to the outer canthus at an angle of 45º to the sagittal plane. Gentle suction avoids contamination with retinal fragments and typically produces 2-3ml of slightly viscous fluid from each eye.

If stomach contents are retained for the purposes of assessing whether a death has occurred acutely following a drug overdose then the sample is best obtained last during the autopsy procedure, to avoid the possibility of contaminating other samples. The

volume of the gastric contents should be measured at autopsy and a representative aliquot or the entire sample submitted for analysis. If the analytical laboratory has a preference for liver tissue analysis then the sample should be obtained from deep within the right lobe to minimise diffusional effects from stomach contents. Bile is easily collected by needle and syringe from the gall bladder at autopsy and, historically, has been most often used in the determination of opiates in general and morphine in particular. Many drugs are concentrated in bile.

In addition to liver, the tissues commonly collected for post mortem toxicological analysis are lung, brain and kidneys. Lung tissue is a useful sample where there has been inhalation of volatile substances such as toluene. Brain, as a result of its high fat content, tends to accumulate lipophilic substances such as chlorinated hydrocarbons and other organic volatiles and should be sampled when these toxic compounds are suspected. Where heavy metal poisoning is suspected, the kidney is a useful sample because heavy metals are concentrated there. Hair and fingernails are also the specimens of choice in assessing chronic heavy metal poisoning such as from arsenic, mercury and lead. Keratin is present in large amounts in hair and nails and is a rich source of cysteine. Heavy metals bind to sulfhydryl groups on the cysteine molecule to form a covalent complex. Numerous therapeutic drugs as well as drugs of abuse have been detected in head hair. Segmental analysis of occipital head hair, which grows at a rate of about 1cm per month, can be used to assess chronic drug usage.

When the body is decomposed, has been embalmed or is a case of exhumation, so that no blood sample is available, then the generally favoured tissue sample for drug analysis is skeletal muscle. The sample is usually taken from the anterior thigh as a matter of convenience because this is the most readily accessible large muscle bulk in a supine cadaver. Any limb muscle would suffice but torso muscle, particularly the psoas, should be avoided because of the risk of post mortem drug diffusion from the stomach contents and viscera.

Where a body is maggot infested the samples taken for toxicological analysis should include the maggots. Drugs present in a corpse are ingested by the maggots and sometimes concentrated within them. Furthermore the maggots can be technically easier to analyse than the decomposing tissue of the corpse which contains many putrefactive compounds that interfere with chromatographic analysis. Maggots can be killed with hot water, dried with paper towelling, and stored frozen. Drugs may also be detectable in the empty pupal cases left on the corpse after the flies have emerged.

Further Reading

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Suicide and Islam

Abstract

Much of the research on suicidal behavior in Muslim countries has been simple descriptive studies of samples of completed and attempted suicides. Despite this, and despite the possible under-reporting of suicidal behavior in countries where such behavior is illegal, suicide rates do appear to be lower in Muslims than in those of other religions, even in countries which have populations belonging to several religious groups. Rates of attempted suicide, on the other hand, do not appear to be lower in Muslims as compared to non-Muslims. Research into this topic has been quite poor, failing to take into account the ethnic background and Islamic sect to which the suicidal subjects belong. Reasons for the low rate of completed suicide in Muslims are reviewed, including differences in values and socio-economic status.

keywords: *Islam, Religion, Completed Suicide, Attempted Suicide*

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The issue of whether Protestants or Roman Catholics have a higher suicide rate has preoccupied suicidologists from the time of Durkheim's (1897) classic work on suicide (see for example, Pescosolido and Georgiana, 1989). The relationship of Islam to suicide is no less important and no less complicated (since there are many sects of Islam), but this relationship has received very little scholarly attention.

The basic "fact" that this paper will address is that suicide rates are much lower in Islamic nations than in other nations and higher in Muslims than in those belonging to other religious groups. We will examine the relevant data and attempt to explain this difference.

First let us look at the basic data. No Middle Eastern nation has reported mortality data to the World Health Organization (WHO) since 1989. The latest suicide rates reported since the inception of the publication of the Annual Statistics from WHO (WHO, annual) are shown in Table 1.

In order to remedy this lack of data, Lester (1996a) tried to obtain suicide rates for as many nations of the world as he was able for 1969-1971 and for 1979-1981. He wrote to the embassies of nations in which do not report mortality rates to the WHO, and he searched the scholarly literature for information on suicidal behavior in those nations for two periods: 1969-1971 and 1979-1981.(1) He then chose a sample of large nations (with populations over one million) for which data were available and examined correlates of suicide rates in 1979-1981 in 61 nations of the world. The suicide rates and percentages of the population which was Muslim for this sample are shown in Table 2. The Pearson correlation between the suicide rate of these nations and the percentage of the population which is Muslim is -0.33 (two-tailed $p < .01$).

Multivariate Studies Of National Suicide Rates

Two studies have appeared which conducted multivariate studies (both factor analyses) of the social variables which are associated with national suicide rates. In a study of 61 nations and 22 social variables in 1980, Lester (1996a) identified six orthogonal factors, one of which had the percentage of Muslims loaded highly on it. Only one of these factor scores was significantly associated with suicide rates, a factor that seemed to measure "developed nation" status (low birth rates, high literacy and highly urban). The factor with a high loading from the percentage of Muslims was not significantly associated with suicide rates.

Simpson and Conklin (1989) used 71 nations circa 1970 and thirteen social-economic variables. A factor-analysis of all fourteen variables identified four factors which Simpson and Conklin labelled as economic development, Islam, Christianity and Eastern Bloc. The factor labelled Islam had high loadings from percentage of Muslims, sex ratio, percentage of women in the labor force, and percentage over the age of 65. The suicide rate was loaded strongly on the factors labelled Economic Development (negatively) and Islam (negatively). In all of the multiple regressions that Simpson

and Conklin examined, the percentage of Muslims was a significant predictor of the suicide rate.

It is interesting that the results of the factor analyses conducted by Simpson and Conklin and by Lester differ in the strength and the relevance of the association between suicide rates and Islam. This illustrates the importance of the period for which the data were chosen, the nations included in the sample, the predictor variables chosen for the study, and the particular statistical analysis used.

Studies Within A Nation

One problem with the multinational studies is that different nations have different practices and customs for certifying deaths as suicides. Thus, nations with low suicide rates are often suspected of covering up suicides by labelling them as natural, accidental or undetermined (Douglas, 1967). Studies within a single nation eliminate this problem to some extent.

After the break-up of the Soviet Union, many new nations appeared. Lester (1999) studied fourteen of these nations in the former Soviet Union, nations such as Azerbaijan and Uzbekistan. The suicide rates and percentage of the population which is Muslim are shown in Table 3. The association between their suicide rates in the early 1990s and the percentage of Muslims was significant and negative (Pearson r = -0.60).

The provinces of India differ in the percentages of Muslims. In 1981, this percentage ranged from 0.64% in Orissa to 66.47% in Jammu and Kashmir (see Table 4). Lester (1996b) found no association between the suicide rate of 21 Indian states and the percentage of Muslims. The Pearson correlation was only -0.09.

The results of these two studies conflict. The former nations of the Soviet Union showed the expected negative relationship between Islam and suicide, but the provinces of India did not. It would be useful in future research to explore when the negative association is found and when it is not and to speculate on reasons for the inconsistencies.

Suicide Rates By Religion Within Nations

Several nations contain residents with differing religious affiliations, and these nations allow us to compare suicide rates by religion under conditions where the medical examiners and coroners may be using similar criteria.

The Indian Subcontinent

Lester (2000) reviewed research on the suicide rates of nations in the Indian subcontinent (Bangladesh, India, Pakistan and Sri Lanka), nations which differ in the proportion of their population which are Muslim (Bangladesh 83%, India 12%, Pakistan 97% [77% Sunni and 20% Shia], and Sri Lanka 7%) (2). However, people from those nations have emigrated to other countries and, of these, only the United Kingdom has suicide rates available by the region of origin.

No suicide rates are available for Bangladesh although I have obtained suicide

rates for those aged 15-19 from Obaedul Huq (personal communication): 0.8 per 100,000 per year in 1965, 1.3 in 1970, 3.1 in 1975 and 2.5 in 1983. This increase could be the result of more accurate reporting and recording of suicides over the period, or a true increase in the rate of youth suicide. Lester (1988) found that 23 of 29 nations had an increase in youth suicide rates in the 1970s, and so it is possible that the increase in youth suicide in Bangladesh is not simply a result of more accurate recording.

No suicide rates are available for Pakistan. In a rare report from Pakistan, Ahmed and Zuberi (1981) estimated suicide rates in the city of Karachi for the periods 1959-1963 and 1974-1978 as 0.72 and 0.11, respectively, very low. They did not calculate suicide rates by sex, but the male/female ratios for the absolute numbers of suicides were 2.7:1 and 1.2:1, respectively. Headley (1983) reported data from an unpublished study indicating a suicide rate of 1.24 for Karachi in 1974-1978.

The suicide rate for Sri Lanka in 1980 was 29.0 and for India in 1990 was 8.9. Murphy (1954) reported that from 1940 to 1952, Hindus in Sri Lanka had a suicide rate of 7.7 while Muslims had a suicide rate of 5.6. Senewiratne and Thambipillai (1974) reported an excess of Sinhalese (primarily Buddhists) and a deficit of both Tamils (primarily Hindus) and Muslims in a mixed sample of completed and attempted suicides from the district of Kandy in 1970-1971.

Meer (1976) presented data for the suicide rates of "Indians" in Durban (South Africa) for 1940-1960, but Meer did not distinguish from which country in the Indian subcontinent the "Indians" came. However, only 4.8% of the completed suicides among Indians were Muslim whereas Muslims accounted for 16.0% of the total population. Thus, Hindus were over-represented among the suicides and Muslims under-represented.

Raleigh (1996); Raleigh, Bulusu& Balarajan, (1990) have provided suicide data in England and Wales for immigrants from these nations, and Dr. Soni Raleigh sent me data from which I could calculate suicide rates. The suicide rates for 1988-1992 were 16.4 for those from India, 12.4 for those from Sri Lanka, 8.3 for those from Pakistan, and 4.2 for those from Bangladesh (see Table 5). Thus, the immigrants from the Islamic nations had lower suicide rates in England and Wales than the immigrants from the Hindu and Buddhist nations.

It is noteworthy that the suicide rate for Indian immigrants in England and Wales are higher than the suicide rate in the home nation, whereas the suicide rate for immigrants from Sri Lanka are lower than the suicide rate in the home nation. Usually immigrants to nations have higher suicide rates than the suicide rates back in the home nations.

The high rate of suicide for immigrants from Pakistan is noteworthy. Although a high rate is expected, the rate in England and Wales does suggest that the suicide rate in Pakistan (for which only rates for Karachi were available) may result from undercounting suicides.

Inner Mongolia

Wang, et al. (1997) found that the Muslim Hui ethnic group in Inner Mongolia had a lower suicide rate (only 1.2) than the Mengs (2.4) and the Hans (4.4). The Hui suicides tended to be younger, less educated and less skilled than the suicides from the other ethnic groups.

Palestine

In Palestine, Levav and Aisenberg (1989a) found that Muslim Arabs had the lowest suicide rate as compared to Jews, Druze and Christian Arabs. However, among teenagers, Kohn, et al. (1997) found that Christian Arabs had a lower rate of completed suicide than Muslim Arabs, although both groups had lower rates than Jews.

Levav and Aisenberg (1989b) found differences by sex. For the period 1976-1985, male Muslim Arabs and Christians had lower age-standardized suicide rates than Jews and Druzes, but female Muslim Arabs and Druzes had lower age-standardized suicide rates that Jews and Christians. Muslim Arabs of both sexes, therefore, had the lower suicide rates.

Malaysia

Teoh (1974) reported suicide rates for West Malaysia in 1970 of 23.3 for Indians, 8.1 for Chinese and 1.1 for Malays, which he attributed to the Muslim religion of the Malays. Ong and Leng (1992) reported data for Kuala Lumpur, the capital of Malaysia, for 1985-1986 from which I was able to calculate suicide rates of 10.2 for Indians, 6.0 for Chinese and 0.2 for Malays. Maniam (1988) also found a low suicide rate for Malays as compared to Chinese and Indians in one region of Malaysia. Murugesan and Hock (1978) found a low rate also of attempted suicide among the Malays.

Ong and Leng (1992) reported that Malays in Kuala Lumpur were under-represented in samples of completed suicides whereas the Chinese and Indians were over-represented. The same was true for attempted suicides also. It is interesting to note that this under-representation of Malays is found in Malaysia where Malays are the majority (57% in the mid-1980s) and in Singapore where they are a minority (15%).

Singapore

Lester (1998) reported suicide rates by ethnic group for Singapore for 1984: 17.8 for Indians, 14.6 for Chinese and 2.7 for Malays. From 1955 to 1984, the median suicide rates were 13.1, 12.5 and 1.5 for the three ethnic groups, respectively, and the relative ranking remained stable over that period.

Most research confirms the low rate of completed suicide and attempted suicide in Malays (Chia, 1979a, 1979b; Chia & Tsoi, 1972, 1974; Ko & Kua, 1995; Kok, 1988; Kua & Tsoi, 1985; Lim & Ang, 1992; Peng & Choo, 1990, 1992; Tan, 1986; Tsoi & Kua, 1987), for both sexes and all ages (Kua, et al., 2003). The Malays do use different methods for suicide than do the Chinese and Indians (Kua & Ko, 1992).

The ethnic groups differ in other ways in their suicidal behavior. For example, Chia (1981, 1983) found that the Malay suicides had fewer over the age of 60 as compared to

the Indians (0% versus 21%), more diagnoses of schizophrenia (36% versus 21%) and more often used jumping (46% versus 32%) and less often used poisoning (0% versus 11%). Suicides in the three ethnic groups also differed in occupational status, major causative factors, and the prevalence of alcoholism and opium addiction.

South Africa

Gangat, et al. (1987) studied a sample of Indian suicides in South Africa and found that Muslims were under-represented and Hindus over-represented as compared to their proportions in the population.

Comment

These studies within nations are very consistent in their results. Muslim residents of these nations have lower suicide rates than those with other religious affiliations. The wide variety of nations with available data makes this conclusions very robust.

Completed Suicide In Muslim Countries

Occasional cases of suicide are reported in the forensic and toxicology literature from Islamic countries. For example, el-Khafief (1991) reported an unusual case of hanging from Dubai, Al-Ragheb, et al. (1986) a case of suicide by xylene ingestion from Jordan, and el-Guindy and Haleem (1971) a case of hanging.

However, this section will review briefly studies of samples of completed suicides rather than individual case reports.

Bangladesh

Hadi (in press) found a higher suicide rate for women in a rural region of Bangladesh (where the population was 88% Muslim) than for men (8.9 versus 4.2). Yusuf, et al. (2000) tracked down all deaths in Bangladesh in 1996-1997 among women aged 10-50 and identified 3317 completed suicides. The unadjusted suicide rate was 8.8 per 100,000 per year with rates ranging in the six regions from 3.5 to 27.0. The suicide rate was higher for married women in all age groups.

Egypt

In a small sample of completed suicides in Egypt, Okasha and Lotaif (1983) found that the modal suicide was female, 30-39 years of age, middle-class, using drugs for the act and suffering from a depressive illness.

Fiji

Haynes (1984) reported that, in a sample of completed suicides among Indians in the Northern division in Fiji in 1979-1982, the proportion of Muslims (versus Hindus) was less than their proportion in the population. Karim and Price (1973) found the same phenomenon in an earlier study of suicide in 1971-1972 in Fiji.

Iran

Farzam (1983) reported on suicides who were autopsied in Tehran from 1964 to 1974. Data on age and sex were not available, but the most common method for suicide was hanging, followed by shooting. A rough estimate of the suicide rate was calculated by the present author from the data that Farzam presented, and for 1970-1972 the rate was 1.3.

Jordan

Barhoum (1983) found an average suicide rate in Jordan in 1968-1981 of 1.8. The modal suicide was male, 20-29 years old, married, using poisons, in an urban area and responding to family and marital disputes. Muslims were over-represented as compared to Christians.

Daradkeh (1989a) studied suicide in Jordan for the period 1980-1985. The mean suicide rate was 2.1; 2.5 for men and 1.6 for women. The rates peaked in men aged 25-24 (3.7) and women aged 15-24 (3.4). The male and female suicides did not differ significantly in age (31 and 28, respectively).

The modal male suicide was single and an unskilled laborer. The modal female suicide was married and a student. Violent methods of suicides were used most often (used by 66% of the men and 50% of the women). The police viewed the majority of the suicides as mentally ill (63%). From 1979 to 1985, the annual suicide and homicide rates were not significantly associated (Daradkeh, 1989b).

Daradkeh (1989b) found a complex seasonal pattern of suicide for the period 1980-1985. The peak months were from March through September, with troughs in October and February and a subsidiary peak in December. There were no differences by sex or by method in this seasonal distribution.

Al-Ragheb and Salhab (1989) identified 329 deaths from pesticides in Jordan during 1973-1985, primarily using organophosphates (94%). The majority were suicides (61%), with 109 males and 92 females. The rate for suicide by pesticides for this period can be estimated roughly to be 0.7. The modal suicide was 12-19 years old, unmarried, and a student, and died soon after ingestion. The peak month was April. The young female suicides were typically under stress resulting from sexual activity (for example, they were pregnant or no longer virgins).

Kuwait

Ezzat (1983) reported on suicide in Kuwait in 1978 and 1981. In 1981, the suicide rate was 4.35, with a rate of 4.5 for men and 4.1 for women. The Kuwaiti rate was 2.3 and the non-Kuwaiti rate was 5.8. Among the non-Kuwaiti suicides, the most common country of origin was India, followed by Palestine, Iran, Egypt, Jordan, Pakistan, Europe, Iraq, Sri Lanka, Oman, and Lebanon. The modal suicide was a male, aged 20-39, using drugs/poisons.

Iraq

Al-Kassir (1983) provided some data on suicide in Iraq. The modal suicide was male, 18-30 years old, living in an urban area and using a gun. The estimated suicide rate for 1969-1971 was 0.15.

Nigeria

Asuni (1962) studied suicide in Western Nigeria for 1957-1960, and estimated the suicide rate among Muslims to be 0.3 as compared to 0.9 for Christians and 0.7 for pagans. Asuni attributed the lower suicide rate among Muslims to the lesser disruption in traditional African living that Islam demands as compared to Christianity with its Trinity, sacraments, monogamy, taboo on amulets, etc.

Pakistan

Ahmed (1983) reported on suicides in Jinnah in 1976-1978. The modal suicide was female, married, aged 15-24, using insecticides and experiencing family problems. The suicide rate was estimated to be about 1.2.

In Peshawar, Pakistan, in 2001, Ali, et al. (2003) identified 89 unnatural female deaths of which only 2 percent were from suicide.

Khan and Reza (2000) identified 306 suicides reported in an English-language broadsheet (DAWN) during 1996-1997 in Pakistan. The modal suicide was male (68%), under the age of 30 (82%), single (58%), committing suicide for domestic reasons (78%) and ingesting poisons (39%). The men were more often single and the women married. The women were also a little younger than the men (23.4 versus 26.8 years). The men were most often unemployed and the women housewives.

Ahmed and Zuberi (1981) studied completed suicide in Karachi for 1974-1978. The suicides were primarily male, with a rate of 0.11 per 100,000 per year. Ashraf (1964) found a rate of 0.72 for 1959-1963. The modal suicide used drugs/poisons and was reacting to domestic troubles.

Sudan

Elsarrag (1968) estimated that the suicide rate in Northern Sudan was less than 1. His impression was that the typical suicide was a single woman, aged 17-30, acting impulsively for a trivial reason, and using burning (kerosene or petrol). He noted that the young age of the modal suicide was to be expected since life expectancy at the time was less than 40 years. He also speculated that the use of burning was an act of self-mutilation associated with the experience of mutilation of the genitals as a young girl. He noted also that men who killed themselves by burning were more likely to be circumcised.

Abdel-Hafeiz and Nadim (1978) identified ten completed suicides in Khartoum Province, Sudan, in a four-year period, primarily by burning, giving a suicide rate of 0.2.7

Syria

Al-Hakim (1983) reported on completed and attempted suicide combined, and so his data are presented below in the section on attempted suicide. The modal completed suicide was equally likely to be male or female, and the most common age was 15-24.

Turkey

Sayil and Devrimci-Ozguven (2002) reported a suicide rate for Ankara in 1998 of 9.9 for males and 5.6 for females, based on the population over the age of 15. This makes the rates difficult to compare with typical suicide rates which are based on the total population. The rate peaked for men aged 75 and over with a subsidiary peak for men aged 45-54; for women the rate peaked for women aged 15-24 with a subsidiary peak for women aged 65-74. Hanging was the most common method for suicide in both men and women.

Bilici, et al. (2002) calculated a suicide rate of 2.6 in Trabzon in Turkey in 1995,

more than twice the official rate of 1.1. The male rate was 3.3 and the female rate 1.9. Unmarried people had a higher suicide rate than married people, and the rates were highest for those aged 15-24 and 25-34. Hanging was the most common method.

Goren, et al. (2003) studied 56 suicides under the age of 19 in one province in Turkey. The modal suicide was 18 years old, female, using firearms at home in response to family conflict.

Attempted Suicide In Muslim Countries

Several studies of attempted suicides in Muslim nations have also been published. This section reviews these papers.

Bahrain

Metery, et al. (1986) identified every attempted suicide in Bahrain in 1981 and calculated a rate of 40.2 per 100,000 per year. The modal attempter was female, unmarried, aged 15-19, making a first attempt with drugs, especially benzodiazepines. As compared to matched controls, the attempters reported more depression, headaches and pain, and had made more visits to health centers in the prior six months.

Al-Ansari, et al. (1997) studied 67 youths aged 15-24 attempting suicide by overdose in Bahrain. The modal attempter in this group was a single, female, Bahraini, student, from the lower classes and using Paracetamol. The rates of attempting suicide were 106.5 in Bahraini youth, 39.3 in non-Bahraini, and 89.8 overall.

Al-Ansari, et al. (2001) compared 100 Bahraini youth (aged 15 to 24 years) who had attempted suicide by overdose with medical patients matched for age and sex. The modal attempter was single, female, aged 15-18, not yet in university, and low in social class. The attempters, as compared to the controls, more often were unemployed, from a non-intact family, involved in a boy-girl relationship, and cigarette smokers. The attempters more often had a highly educated mother, had recently failed an exam, and had few friends. They did not differ in father's education, social class, death of father, arguments with friends, drug and alcohol use or problems with the law, finances or teachers.

Egypt

Okasha and Lotaif (1979, 1983) studied attempted suicides in one region of Cairo in 1975 and calculated a rate of 38.5. The proportion of Muslims (versus Coptics) matched the proportions in the general population. The modal attempter was a single, male, student, aged 15-24, attempting suicide in May, from the lower or middle classes, diagnosed with a depressive illness, and taking an overdose.

Iran

Farzam (1983) looked at 8,928 attempted suicides by poisons in Tehran in 1970-1972. The modal attempter was female, aged 15-19, with family problems, most often using opium for the attempt (followed by insecticides). Single and married individuals were equally represented. Estimates of the rate of attempting suicide were 146 in 1970, 87 in 1971 and 96 in 1972.

Gharagozlu-Hamadani (1972) reported

that the modal suicide attempter in Shiraz was single, female, aged 20-29, a student, with a high school education, diagnosed with a depressive reaction, using poison (most commonly opium), after a quarrel with a family member or employer.

Bordbar, et al. (1975) reported on 200 cases of opium poisoning (the most popular method for attempting suicide) during the period 1968-1972. The mortality rate was 1.5%.

Jordan

Barhoum (1983) found an attempted suicide rate in Jordan for 1968-1981 of about 7.1. The modal attempter was single, female, aged 10-19, using poisons, in an urban region and responding to family and marital disputes. Muslims were over-represented as compared to Christians.

Daradkeh (1988a) identified all treated attempted suicides in Jordan for 1980-1985. The rate was 11.3 in 1980, rising to 19.4 in 1985. The modal attempter was a single, female, student, aged 18-27, using ingestion, after a family dispute. Daradkeh (1992) found that the incidence of attempted suicide declined during Ramadan in 1986-1991 as compared to the months preceding and following Ramadan.

Saadeh, et al. (1995) studied all attempted suicides by solids/liquids in one hospital in North Jordan for a four year period: 709 cases were admitted, and 647 medical records reviewed. These accounted for 8% of all admissions, and produced an annual rate of 127. Among adolescents (15-19 years old) the rate was 416. The modal attempter was female, aged 15-19, a student, and single. The most common substance used was Paracetamol, but household products (such as bleach, kerosene and pesticides) were also common. Only 17% of the patients received a psychiatric diagnosis, and the most common diagnosis was depressive illness.

Kuwait

Ezzat (1983) reported on attempted suicide in Kuwait in 1978 and 1981. The modal attempter was female, aged 15-19, using analgesics and responding to adversity/stress. In 1981, the rate for Kuwaitis was 12.5 and for non-Kuwaitis 10.3. Among the non-Kuwaitis, the most common country of origin was Egypt (whose emigrants had the highest rate - 42.9), followed by Palestinians and Indians.

Fido and Al-Mughaiseeb (1988) reported on 90 attempted suicides who were referred for psychiatric consultations in Kuwait. The modal patient was female, aged 16-25 years, with an adjustment disorder, and overdosing (most commonly with Paracetamol).

Suleiman, et al. (1986, 1989) also studied attempted suicides in Kuwait. The modal attempter was female, under the age of 30, using self-poisoning, reacting to family arguments, and a non-Kuwaiti Arab. After a two-year follow-up, 20% had repeated their attempts. The repeaters were more likely to be housewives and clerical workers, but did not differ in religion (Muslim versus Christian), age, sex, nationality, marital status or education.

Emara, et al. (1988) reported on 227 attempted suicides by overdose and calculated rates for the population aged 15-50 of 95 for Kuwaitis, 47 for non-Kuwaitis, 81

for females and 24 for males. The modal attempter was female, non-Kuwaiti, aged 20-25, and using just one drug, most commonly acetaminophen.

Muscat and Oman

Zaidan, et al. (2002) examined people coming to urban hospitals in Oman with deliberate self-poisoning. The modal patient was Omani, single, female, aged 20 to 30 years, using non-steroid analgesics (especially Paracetamol), responding to family conflict, and for the Omanis, a student. Only 19 percent were judged to have a history of behavioral or mental disorders.

The rate of deliberate self-poisoning for Omanis rose from 1.9 per 100,000 per year in 1993 to 12.8 in 1998. Zaidan, et al. speculated that this dramatic increase was a result of the cultural stress due to rapid modernization following the increase in oil revenues. There have been cultural changes, including a switch to a class system based on wealth (rather than tribal identification), a growth in individualism, a switch from dependence on the extended family to the nuclear family, high unemployment (especially among youth), and urban drift.

Nigeria

Odejide, et al. (1986) found fewer Muslims (as compared to their proportion in the population) among a sample of attempted suicides in Ibadan, Nigeria, in a six month period in 1964.

Pakistan

Ahmed (1983) reported that the modal suicide attempter in Jinnah in 1976-1978 was single, female, aged 15-24, experiencing family problems (followed closely by unhappy love affairs), and using tablets (closely followed by insecticides).

Khan and Reza (1996, 1998; Khan, et al. 1996) studied 447 attempted suicides admitted to a hospital in Karachi. The modal attempter was 16-29 years old, female, with 12 or more years of education, who used self-poisoning (especially benzodiazepines), after family conflicts, and diagnosed as having an acute situational stress reaction. The female attempters were younger more often married and less often single, less educated, and had experienced more in-law conflicts and fewer boy/girlfriend conflicts than the male attempters.

Jamil (1990) studied cases of acute poisoning in the Jinnah Postgraduate Medical Center over a 10 year period and identified 1,330 attempted suicides (some 70% of the total cases). Twenty-five of the patients were repeating attempts.

Ahmed and Zuberi (1981) studied attempted suicide in Karachi for 1974-1978. The attempters were primarily male, with a rate of 0.73 per 100,000 per year. Ashraf (1964) reported a rate of 0.82 for 1959-1963. The modal attempter used sharp instruments or drugs/poisons and was reacting to domestic troubles.

Saudi Arabia

Malik, et al. (1996) studied drug overdoses in the Asir region of Saudi Arabia for 1989-1993. There were 46 attempted suicides in the sample, with a modal attempter being single, Saudi, female, under the age of 40, with 6-12 years of education, and depressive illness or a personality disorder

and using analgesics or anti-inflammatory drugs.

Daradkeh and Al-Zayer (1988) studied Saudi employees and dependents of the Arabian-American Oil Company in 1986. The modal attempted suicide was married, female, with a mean age of 24 years, and a housewife. The attempt was unplanned, due to marital or parental conflict, using non-opiate analgesics. The most common psychiatric diagnosis was acute reaction to stress, and there was rarely a history of prior attempts. A desire to die and attention-seeking were equally common motives. The attempted suicide rate for this sample was 20.7 - 15.4 for the employees and 22.3 for the dependents.

Al-Shlash, et al. (1996) reported that 3.7% of burn patients seen at a hospital in Saudi Arabia were suicidal. Suicidal patients were more likely to die than those cases which were accidental (31% versus 6%). The suicidal patients were almost all females. There have been many reports of burn patients in Saudi Arabia, but they typically do not distinguish between native Saudis and foreign workers in the data presentation. Also, suicidal behavior involving burns is not a common method for suicide. In the report by Al-Shlash, et al., only 16 of the 435 burn patients in an eight-year period were suicides, an average of two per year.

Mahgoub, et al. (1990) reported on 15 Arab and 16 Asian attempted suicides in one province of Saudi Arabia. The majority were young (under the age of 25) and reacting to interpersonal conflicts. The use of drug and poisons was especially common among the female attempters, with males using more violent methods(such as jumping and stabbing). Mahgoub noted that, since attempted suicide is a crime in Saudi Arabia and since immigrants can be deported for attempting suicide, many attempted suicides may avoid medical facilities.

Sudan

Abdel-Hafeiz and Nadim (1978) found that the modal attempted suicide in Khartoum Province in 1971-1975 was aged 10-29, unemployed, and used burning. The rate can be estimated to be 1.9.

Syria

Al-Hakim (1983) presented data on completed and attempted suicide combined. The average rate was 1969-1972 was 4.9; 3.3 for Syrians and more for other nationalities (for example, 10 for Palestinians). The modal attempter was female, aged 15-24, living in an urban area and using solids/liquids. Overall, for all suicidal acts, Muslims were over-represented (as compared to Christians), and the Sunnis were over-represented among the Muslim sects.

Turkey

Sayil, et al. (1998) found attempted suicide rates in Ankara of 107 in 1990 and 113 in 1995. The modal attempter was single, unemployed, female, 15-24 years of age, using an overdose, and precipitated by conflicts with the partner or the family.

Sayil and Devrimci-Ozguven (2002) studied the attempted suicides in a region of Ankara and calculated rates of 57.9 based on the population over the age of 15. The rate was 31.9 for men and 85.6 for women.

The male rate peaked for men aged 45-54, whereas the female rate peaked for women aged 15-24. Self-poisoning was the most common method for men and women. Men were more likely to use alcohol as a supplement than were women.

Bilici ,et al. (2002) calculated attempted suicide rates for Trabzon for 1995, estimating the rate to be 31.5; 16.7 for men and 45.3 for women. The rate was highest in those aged 15-24, those unmarried, and the unemployed. The most common method was an overdose. Bilici, et al. compared the characteristics of the completed and attempted suicides in this town. The completed suicides were more likely to be male and of low economic status; they were older, less often used overdoses, and less religious.

Suicidal Ideation

A few studies have surveyed samples of individuals for the prevalence of suicidal ideation (past and present).

Egypt

Okasha, et al. (1981) surveyed Egyptian medical students and found that 4.0% had suicidal ideation in the past year, and 0.4% had attempted suicide. Suicidality was more common in the females and if they had symptoms of depression, life stress or a medical illness.

Kuwait

Lester and Abdel-Khalek (1998a; 1998b; Abdel-Khalek and Lester, 2002b) found no differences in current suicidal ideation between Kuwaiti and American college students, although the Kuwaiti students obtained higher overall depression scores on a self-report inventory. However, in a later study, Lester and Abdel-Khalek (1998b) found that Kuwaiti students reported less prior suicidal ideation (but no difference in prior suicidal threats or attempts).

Nigeria

Lester and Akande (1995) found no differences in current suicidal ideation between Muslim Yoruban (Nigerian) students and American students.

Sudan

Goldney, et al. (1998) surveyed small numbers of women in Sudan and found that 27% of university students and 59% of displaced women has thought about suicide in the past few weeks according to questions on the General Health questionnaire. Goldney did not, however, report the religion of the women, but both samples were obtained from near Khartoum.

Turkey

Lester, et al. (1991) explored the association between locus of control, depression and suicidal ideation in American and Turkish students. 26.5% of the Turkish student students had considered suicide and 3.1% had attempted suicide as compared to 47.5% and 10.0% of the American students, respectively. A history of suicidal ideation was associated with depression scores in both groups. For the Turkish students, a history of suicide ideation was associated with higher external locus of control scores, but the association was not significant for the American students. For the American students, a history of attempting suicide was

associated with higher external locus of control scores, but the association was not significant for the Turkish students.

Eskin has carried out several psychological studies of suicidality in Turkish individuals. For Turkish people living in Sweden, Eskin (1993) found that suicidal ideation was associated with hopelessness, a negative self-evaluation and hostility. Suicidality scores were also associated with perceived social support but not with assertiveness.

Eskin (1995a) studied high school students in Turkey and found that a history of suicide attempts (reported by 10.9% of the students) was associated with having previous psychiatric contacts, perceived family support, psychiatric disorder in family members, parental divorce, completed suicides in the family, and gender.

Attitudes Toward Suicide

A few studies have examined attitudes toward suicide.

Ethiopia

Alem, et al. (1999) compared the attitudes of Christians and Muslims in Ethiopia and found the Christians to be a little more negative toward suicide than the Muslims (for example, seeing suicides as deserving little sympathy). The two groups also proposed slightly different causes for suicide, with the Muslims viewing family conflict as more relevant.

Nigeria

Lester and Akande (1994) found that Yoruban students had a more negative attitude toward suicide than did American students and, by Western standards, had less accurate knowledge about suicide. Lester and Akande (1997) found also that these Yoruban students held more negative attitudes toward suicide than did Zambian Lozi-speaking students (who were predominantly Christian).

Turkey

Lester and Icli (1990) surveyed American and Turkish students about their attitudes toward suicide. Overall, the Turkish students had been less preoccupied with suicide in the past, but the two groups had similar views about the morality of suicide. On a "myths about suicide" scale developed by Western suicidologists, the Turkish students had a less accurate knowledge score. Lester, et al. (1994) found that knowledge accuracy scores for the Turkish students were not associated with age, sex, depression scores or external locus of control scores.

Sahin, et al. (1998) studied the responses of urban high school and university youths to the Reasons for Living Inventory, but they did not correlate the scores with any measures of suicidality. Sahin, et al. (1994) found that the stereotypes of suicide that respondents held varied with the age and sex of the hypothetical suicide and with the age and sex of the respondent.

Research On Suicidal Behavior

Several researchers have begun to test hypotheses about suicidal behavior in Islamic countries, exploring whether Western research findings on suicidal behavior are replicated using Muslim samples.

Kuwait

Lester and Abdel-Khalek (1998b) found that current and prior suicidality were associated with measures of psychological disturbance (depression, obsessive-compulsiveness and hopelessness) in both Kuwaiti and American college students. For the Kuwaiti students, suicidality was associated also with an external locus of control and with sex (with females reporting greater suicidality).

Abdel-Khalek and Lester (2002a) found that suicidality (current and past) was associated with depression and obsessive-compulsive scores but not with manic scores in a sample of Kuwaiti university students.

Abdel-Khalek and Lester (2002b) found similar positive associations between suicidality and measures of psychopathology (ego-grasping orientation, death obsession, pessimism, optimism, obsession-compulsiveness and anxiety) in Kuwaiti and American university students.

Nigeria

Working in an Adlerian framework, Akande and Lester (1994a) found that sibship size, but not birth order, was associated with suicidal ideation in Muslim Yoruba students in Nigeria.

Akande and Lester (1994b) found that suicidal ideation in Yoruban students was associated with depression scores and belief in an external locus of control, whereas suicidal ideation was associated only with depression scores in American students.

Turkey

Eskin (1995b) found that Turkish high school students were more accepting of a suicidal peer than were Swedish students, yet the Swedish students had a more liberal general attitude toward suicide. Among the Turkish high school students, females were more accepting of suicidal classmates and suicide in general than the males (Eskin, 1992).

Agargun and Kara (1996) found that psychiatric patients with pure panic disorder were less suicidal than those with comorbid diagnoses.

Comment

It is very important that researchers in other countries replicate results reported elsewhere. It should not be assumed that, for example, results found in research on suicidal behavior in Western nations will automatically apply in Arab or Islamic countries. These few studies reviewed above do, on the whole, support findings from other nations, but this may not always be the case.

Discussion

The first issue is whether the reported completed and attempted suicide rates in the Muslim world are valid. In many Islamic nations, completed suicide and/or attempted are considered to be criminal offenses. Furthermore, in general, Islam forbids suicidal behavior (Al-Najjar, 1976; Chaleby, 1996). Thus, there is a strong possibility that completed and attempted suicidal behavior is covered up, that is, not reported or misclassified, and so rates of completed and attempted suicide in Islamic countries may be unreliable. It is important in future

research to explore to what extent suicidal behavior, fatal and nonfatal, is miscounted in Islamic nations.

At the present time, there is a large multi-center study being conducted in several European countries trying to adopt a standardized procedure for counting and describing the characteristics of attempted suicides (Kerkhof, et, al., 1994). This makes the comparison of attempted suicide from nation to nation much more reliable and useful. Similar kinds of projects would be most useful, both for completed and attempted suicide, in Islamic countries.

Islam is not a unified religion, and there are competing sects. Another issue that has not been addressed by scholarly research to date is whether there is a difference in the suicide rate of Sunni and Shia Muslims (and of other sects such as Ahmadi, Alawai, Druze, Ismaili, Qadiani, Sufi and Yezidi), or within each sect a difference between the types (e.g., the orthodox Hanafi). There has been a long theoretical and empirical debate in the West over whether Protestants and Roman Catholics differ in their suicide rates, based upon differences in social integration, social regulation and attitudes toward suicide. A similar debate would seem to be pertinent to suicide among Muslims from different sects.

A similar issue can be raised regarding the "Arab" world. The Arab world is not a single homogenous region. At the very least, three separate regions can be identified: the Maghreb (Libya, Tunisia, Algeria and Morocco), the Mashreq (from Lebanon and Egypt to Oman), and the periphery (Mauritania, Yemen, Somalia and Djibouti). It would be of great interest to compare suicidal behavior over these regions (or using other divisions of the Arab world).

The Muslim world is even more diverse. For example, Islam in Indonesia, until recently, included many aspects of Indonesia's Hindu and pagan past (Anon, 2003). Today, there is a division between the santri (orthodox Muslims) and the abangan (Muslims who incorporate folk religion). Each Islamic nation has its own ethnic mix and variation in the sects and practices of Islam. The impact of these divisions or suicidal behavior needs to be explored.

What are the explanations for the low rate of suicidal behavior among Muslims, assuming it is a valid phenomenon? Ineichen (1998) suggested that Islam is much firmer about the sinfulness of suicide than is Hinduism which Ineichen claims is relatively ambivalent about it. The same may be true for Islam versus some Christian sects.

Kamal and Loewenthal (2002) gave Hindus and Muslims living in London (England) a questionnaire containing reasons for living. The Muslims endorsed moral and surviving-coping reasons for not committing suicide more than the Hindus did, and obtained a higher overall score. Thus, the Muslim respondents did seem to be more morally opposed to suicide than the Hindus were.13

Within particular nations, there are speculations about the cause of the low rate of suicide among Muslims. For example, Peng (1992) suggested that the Muslim Malays in Singapore were the most contented of the

three ethnic groups (Malay, Chinese and Indian). He argued that Islamic values impose an injunction against materialism and the accumulation of wealth, so that the need to achieve and succeed is less strong among the Malays. He suggested also that the Malays tend to be more fatalistic and resigned to fate and so less depressed by poor outcomes in life. Self-criticism is rare, and failure is more acceptable, attitudes that would protect against suicide. It is important in future research to seek for objective data to back up such speculations.

An interesting finding was that, in Jordan and Syria, the limited data suggested that Christians in those countries have a lower incidence of completed and attempted suicide than the Muslims. Al-Hakim (1983) reporting on Syria, suggested that the Christians there have strong social cohesion and, although a minority, share the many of the same values as the Muslims and are peaceable and well-ordered. Thus, they do not attract "negative attention". Discrepancies from the general rule provide important examples to test hypotheses about the causes of differences in suicidal behavior between Muslims and non-Muslims.

Muslim nations differ from other nations in many social and economic ways. For example, in Simpson and Conklin's (1989) factor analysis, the percentage of Muslims in a nation was associated with the sex ratio, the percentage of women in the labor force, and the percentage of the population over the age of 65. It may be these socio-economic factors which are the cause of the difference in suicide rates.

Alternatively, as Lester (1999-2000) has suggested, it may not be these individual variables that determine the suicide rate. Rather it may be that there are broader, more abstract social qualities (such as Durkheim's [1897] notion of social integration and social regulation) which determine the suicide rates of nations, and these single variables are merely manifestations of these broader social qualities. For example, the divorce rates and suicide rates of nations are strongly associated. Rather than interpreting this association as "divorce causes suicide" at the societal level, it may be that the divorce rate is a manifestation of the level of social integration of the societies and that it is social integration which causes the suicide rate.

Clearly, a great deal of theorizing and research is needed before we can understand the occurrence and characteristics of suicidal behavior in Muslims and in Islamic nations. However, the large number of relevant references identified for this review is encouraging for it shows that the foundations for this future research have already been laid.

TABLE 1: Suicide Rates Reported to WHO by Middle Eastern Nations (latest available year)

	total	male	female	year
Bahrain	3.1	4.9	0.5	1988
Egypt	0.04	0.1	0.0	1987
Jordan	0.0	0.1	0.0	1978
Kuwait	0.8	1.0	0.6	1987
Syria	0.3	0.5	0.1	1981

TABLE 2: Suicide Rates And Percentage Muslims, 1979-1981

	suicide rate	% Muslim		suicide rate	% Muslim
Argentina	7.2	0.0	Netherlands	10.2	0.0
Australia	11.3	0.0	New Zealand	10.2	0.0
Austria	26.0	0.0	Norway	12.4	0.0
Belgium	21.5	0.0	Panama	2.0	0.0
Brazil	3.4	0.0	Papua/ New Guinea	0.2	0.0
Bulgaria	13.9	10.5	Paraguay	1.5	0.0
Canada	14.1	0.0	Peru	1.2	0.0
Chile	5.5	0.0	Poland	12.7	0.0
Colombia	3.5	0.0	Portugal	8.3	0.0
Costa Rica	4.4	0.0	Puerto Rico	8.5	0.0
Czechoslovakia	19.8	0.0	Saudi Arabia	1.3	98.8
Denmark	29.1	0.0	Singapore	9.8	17.4
Dominican Republic	2.0	0.0	South Africa	5.3	1.3
Ecuador	2.8	0.0	South Korea	20.6	0.0
Egypt	0.1	81.8	Spain	4.4	0.0
El Salvador	12.1	0.0	Sri Lanka	27.8	7.2
Finland	24.7	0.0	Sweden	19.1	0.0
France	19.2	3.0	Switzerland	24.7	0.0
Greece	3.2	0.0	Syria	0.4	89.6
Guatemala	1.0	0.0	Taiwan	9.9	0.0
Honduras	1.2	0.0	Thailand	7.1	3.9
Hong Kong	12.4	0.0	Trinidad & Tobago	4.8	6.5
Hungary	45.0	0.0	Turkey	1.8	99.2
India	6.0	11.6	United Kingdom	8.6	0.0
Ireland	6.2	0.0	USA	12.0	0.0
Palestine	6.0	8.0	USSR	26.9	11.3
Italy	7.1	0.0	Venezuela	4.7	0.0
Japan	17.5	0.0	West Germany	21.4	2.4
Jordan	2.2	93.0	Yugoslavia	14.8	10.4
Kuwait	0.7	95.1	Zimbabwe	6.1	0.0
Malaysia	0.6	49.4			
Mexico	1.7	0.0			

TABLE 3: Suicide Rates in Nations from the former USSR

	suicide rate 1990	% Muslim
Armenia	2.8	0
Azerbaijan	1.6	87
Belarus	20.4	0
Estonia	27.1	0
Georgia	3.6	11
Kazakhstan	19.1	47
Kyrgyzstan	12.5	70
Latvia	26.0	0
Lithuania	26.1	0
Moldova	14.8	0
Russia	26.5	99
Tajikistan	4.4	85
Turkmenistan	8.1	87
Ukraine	20.7	0
Uzbekistan	7.2	88

TABLE 5: Suicide Rates Of Immigrants From The Indian Subcontinent To England And Wales, 1988-1992 (from Lester, 2000a)

	total	male	female
Indians	16.4	23.1	10.0
Sri Lankans	12.4	13.4	11.3
Pakistanis	8.3	11.1	5.3
Bangladeshis	4.2	5.4	2.9

TABLE 4: Suicide Rates in Indian Provinces

	suicide rate 1981	% Muslim 1981 Census
Andhra Pradesh	5.45	8.8
Assam	-	-
Bihar	0.64	14.4
Gujarat	4.84	8.7
Haryana	4.97	1.1
Himachal Pradesh	2.04	0.1
Jammu & Kashmir	0.33	66.5
Karnataka	10.71	11.3
Kerala	16.10	21.3
Madhya Pradesh	4.95	4.9
Maharashtra	5.65	10.1
Manipur	0.44	7.2
Meghalaya	3.15	4.2
Nagaland	1.61	1.6
Orissa	7.21	0.6
Punjab	4.29	2.6
Rajasthan	2.53	7.5
Sikkim	9.42	1.4
Tamil Nadu	10.01	5.2
Tripura	21.83	6.9
Uttar Pradesh	2.79	16.0
West Bengal	12.10	21.7

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Allegations of Professional Negligence in Medical Practice - Indian Scenario of a Global Problem

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Abstract:

Negligence, as a tort, is the breach of a duty caused by omission to do something which a reasonable person would do, or doing something which a prudent and reasonable person would not do."1 It has many manifestations- it may be active or passive negligence, collateral negligence, comparative negligence, concurrent negligence, and willful or reckless negligence. It is not unusual to find allegations of negligence being reported against doctors by the print and the electronic media nowadays. This article reviews the various features of negligence, the legal aspects thereof and the defences of a doctor in a suit of negligence.

INTRODUCTION

Professional negligence in medical practice, also known as medical negligence, mal-praxis or malpractice is defined as a lack of reasonable care and skill or willful negligence on the part of a medical practitioner in the treatment of a patient, whereby the person under his treatment sustains injury to his body or loses his life. It includes both, i.e., "the act of Commission" and "the act of Omission".

A medical practitioner is presumed by law to use a reasonable degree of skill, care and knowledge, in the treatment of his patients, to the best of his ability and judgment. The degree of skill, care and knowledge depends on whether he is a general practitioner or a specialist. The standard of care by which a medical practitioner will be judged is the standard of care exercised by an ordinary professional with the same knowledge and expertise.[2] However, an error in diagnosis or treatment is not negligence, provided proper care and skill had been exercised by the medical practitioner, to the best of his ability and in good faith.

Though, as a rule, the law is very considerate to medical profession, the number of cases of alleged professional negligence has registered a persistent increase. An action for professional negligence can be brought against the clinician in both civil and criminal courts. Hence negligence is accordingly classified as Civil negligence or Criminal negligence. Negligence in India, can also be a subject of enquiry by the state Medical Council or Medical Council of India. As such it will be prudent for the present day doctors to be aware of the legal aspects and preventive measures of such allegations

LEGAL ASPECTS:

The modern view of negligence was expressed by Lord Denning[3] "On the road or in a factory, there ought not to be any accidents if everyone used proper care. But in a hospital, when a person was ill and came for treatment, no matter what care was used, there was always a risk, and it would be wrong and bad in law to say that simply because a mishap occurred, the hospital and the doctors were liable. Indeed it would be disastrous to the community. It would mean that the doctor, instead of treating a patient, would be forever looking over his shoulder to see if some one was coming up with a dagger - (i.e. an action for negligence). There are inherent risks in most forms of medical treatment. All that one can ask is that the doctor keeps these risks to the minimum. If he has done this, no injury, which occurs, however serious, is actionable."

Again, "…. A mistaken diagnosis is not a negligent diagnosis. It has been firmly established that a medical practitioner should not be held negligent simply because one of the risks inherent in an operation of that kind occurs or because he has failed to warn the patient of every risk involved in a proposed course of treatment".[4]

"A charge of professional negligence against a medical man is serious. It stands on a different footing than a charge of negligence of motor car driver. The consequences are far more serious as it affects the doctor's professional status and reputation hence the

burden of proof is correspondingly greater. A doctor is not to be held negligent simply because something went wrong or there was a misadventure or an error of judgment. He is liable only when the standard of care was below the standard of care of a reasonably competent practitioner in his field, so much so that his conduct becomes inexcusable''.[5]

"Deficiency is an expression of wider importance than "Negligence". An act of omission, which may not amount to negligence, may amount to deficiency. Negligence in rendering service is thus more serious than deficiency in rendering service".[6]

Criminal negligence:

The criminality lies in running the risk or doing an act with recklessness and indifference to the consequences. It is gross and culpable neglect, i.e., failure to exercise that care or to undertake those precautions, which having regard to the circumstances, it was the imperative duty of the individual to take. Culpable rashness in acting with the consciousness that mischievous consequences are likely to follow. On the other hand, many judgements by the Hon'ble courts have decreed that "mensrea'' or a "guilty mind'' must be found in relation to negligence / rashness before holding a case of criminal negligence.

The Kerala High Court, in a judgement,[7] while upholding the proceedings Under Section 304-A of Indian Penal Code, held that "Section 304 A is the penalizing provision for causing death by any rash or negligent act which does not amount to culpable homicide. The act which causes death need not necessarily be a rash act, it is enough that death is caused by negligent act of the accused. To sustain the charge of causing death by a negligent act, it is necessary that death should have been the direct result of the negligent act. That act must be the proximate cause, without any other supervening act or intervention''

Burden of proof:

In a medical negligence case, usually an injury is alleged to have occurred as a result of treatment error or omission. In the informed consent context, however, litigation may be initiated even where there has been no treatment error or omission (for example, where treatment that entails foreseeable material risks causes injury). The patient thus complains not that the treatment was negligently provided but that had there been full disclosure of the material risks or available alternatives he/she would not have undergone the treatment and thus would not have been injured (the 'but for' rule). However, virtually any patient confronted with a severe disability resulting from treatment will testify that if he / she had known of the risk, he / she would have refused the procedure. Therefore another doctrine usually advocated is, what is known as the 'prudent patient rule' i.e., what a prudent person in the patient's position would have decided if adequately informed about all the reasonably foreseeable risks. The burden of proving negligence thus rests upon the person who asserts it. It is for the complainant to establish his claim of negligence against the doctor, and not for the clinician to prove that

he acted with sufficient care and skill.

There are, however, certain circumstances, when the plaintiff need not prove the negligence of the doctor and the inference of presumption of negligence is drawn from the facts of the case, according to the maxim, "res ipsa loquitur". The essentials of res ipsa loquitur are:

- Nature of injury or damage suggested by common knowledge or inferred from expert evidence, that without negligence, it does not occur.
- The defendant must be in exclusive control of the instrumentation or circumstances.
- The plaintiff must not contribute to his own injury or damage.

SOME IMPORTANT JUDGEMENTS:

1. Death on operation table:

In one judgement,[8] the court opined that "when death of the patient occurred within the four walls of the operation theatre where the patient's relatives had no access whatsoever, the onus lies on the doctors in the Operation Theatre to explain the events that had happened there. It is the duty of the doctors to prove or rule out the cause of death for which they are allegedly held responsible." However, in another case a 22-yr old, 8 months pregnant woman was being anesthetized for caesarian section by the obstetrician by injecting Xylocaine spinally. Within minutes, BP dropped and even after complete resuscitative procedures, she was declared dead within 10 min. The case was registered Under Section 304A of the Indian Penal Code. The prosecution submitted that the doctor was criminally negligent in not giving the test dose of xylocaine and that he was not an anesthetic expert. The Karnataka High Court, while quashing the proceedings Under Section 304A of Indian Penal Code held that "in the absence of a postmortem examination, histopathology, etc, the possibility of other causes of death cannot be ruled out. The death on the operation table by itself is not sufficient to prove rashness/negligence against the accused. Rashness and negligence are not the same things. Negligence cannot be construed to mean rashness. There are different degrees of rashness/negligence. One must find out that the rashness has been of such a degree as to amount to taking a hazard knowing that the hazard was of such a degree that injury was most likely to be occasioned thereby. The criminality lies in running the risk or doing such an act with recklessness and indifference to the consequences. It is unfortunate that the patient died. It cannot be said that the accused did not take proper, precautionary and reasonable steps at all. The consequences were unforeseen and unpredictable…."

It was stressed in the judgement that one should not be carried away by the unfortunate death. What is to be seen is whether proper, fair and reasonable treatment was given by the accused to the deceased. If proper, fair and reasonable treatment was given and still death ensued, the death cannot be attributed to any imaginary rashness or negligence on part of the accused.

The learned Govt. Pleader urged that a

test dose ought to have been given by the doctor. Shock by administration of such doses (1.2 cc xylocain.) is one in a 100000 or so. Merely because one in a 100000 cases brings about disastrous results, it does not mean that non-giving of test dose was an indication of rashness or negligence. A negative result after a test dose does not ensure satisfactorily that the disastrous consequences could not ultimately have followed.

Regarding the doctor not being an anesthetic expert, the court observed, "It is true that nowadays Diplomas and P.G. degrees in anaesthesia are open to the candidates. But it does not mean that the persons holding degrees like MBBS, FRCS, DGO, are not qualified to administer anesthesia. Hence the plea that the doctor is not an expert anesthetist fails."[9]

However, in a case where Laparoscopic Tubectomy was performed on a healthy 28 yr old female and she died during the process, the High Court of Rajasthan, while upholding the proceeding U/S 304A IPC, held: "When ever laparoscopic tubectomy is being done, whether in a major hospital or in a smaller hospital or in laparoscopic tubectomy camps, a trained anaesthetist with M.D. degree in anaesthesiology and resuscitative facilities like endotracheal intubation, defibrillator and cardiac monitoring equipment, etc should be available. This should be mandatory for every laparoscopic tubectomy operation, in view of the sensitive nature of the operation….".[10]

2. Sponges/instruments, etc left in the body cavity:

In a case of caesarean operation, where in a sponge was left in the abdomen of the patient and another operation had to be performed to remove it, it was held that: "Counting of the sponges is the duty of the scrub nurse and not the doctor performing the operation. Negligence on part of the scrub nurse in counting the sponges led to the complications. The hospital, as the employer, is vicariously liable to compensate the claimant. No deficiency on part of the doctor on performing the caesarean operation".[11]

However, "The responsibility of the surgeon for things done or left undone in the operation theatre has been the subject matter of consideration. In what are known as 'swab cases' and 'forceps' left in the body of the patient at the end of an abdominal surgery, there is a real and grave danger to the patient. The liability of the surgeon for negligence has never been doubted."[12]

In yet another case, where a ten inches square pack was left in the patient's abdomen after a caesarean operation, the court held the surgeon guilty of negligence as he did not take any special precautions to guard against the possibility of the pack being overlooked, but relied entirely on the nurse's Count[13].

3. Unqualified staff (nurses):

In Spring Meadows Hospital & Anr Vs Harjot Ahluwalia,[14] the National Commis-

sion decreed that "According to the Punjab Nurses Registration Act 1932, 'Nurse' means 'a person who holds a certificate in nursing from an institution recognised on this behalf by the council or one who had been registered in subsection (2) of Section 14'. According to section 2 of Delhi Nursing Home Registration Act,' "a nurse registered in any State or Union Territory in India under a law for registration of nurses" is a Qualified Nurse. Since the said nurse was not a Qualified Nurse, it was clearly negligence on part of the hospital to employ her. She should not have been entrusted with the care of the patients. Any nurse always means a qualified nurse only and it does not include an unqualified nurse."

Again it was held in A.M. Mathew Vs The Director, Karuna Hospital & Ors, that "since the degree of the said nurse was not recognised by the Kerala State Council (Nurse/midwife), she was not a "nurse" and hence was not qualified to administer the injection. Her conduct therefore amounted to negligence and the hospital was vicariously liable to compensate the claimant".

4. Vicarious liability:

"Regarding the Vicarious liability of those who run the hospital for the negligent acts of the personnel employed by them, the question is no longer in dispute. People who run a hospital are in law under the same duty as the humblest doctor. Whenever they accept a patient for treatment, they must use reasonable care and skill to cure him of his ailment. The hospital authorities cannot, of course, do it by themselves. They must do it by the staff which they employ: and if their staff are negligent in giving the treatment, they are as much liable for that negligence as any one else who employs others to do his duties for him."[15]

5. Non-allopath practicing allopathy:

"If a person practices medicine without possessing either the requisite qualification or enrolment under the Indian Medical Council Act, 1956, he/she becomes liable to be punished with imprisonment or fine or both ---. Since the respondent was registered as a medical practitioner in Homeopathic Council, he was under Statutory obligation not to enter the field of any other System of Medicine, as admittedly, he was not qualified in any other system. His conduct (whereby he was practicing Allopathic System) amounts to actionable negligence" ruled The Hon'ble Supreme Court.[16]

6. Duties towards the patient:

"Recovery of fees for a treatment which is not rendered to a consumer will definitely amount to deficiency in service of a doctor."[17]

"A medical practitioner cannot claim that the moment he performs an operation, his responsibility comes to an end and he owes no duty for any post-operative responsibility. In fact he is under ethical and moral obligation to take care, as he is the best person to know about the requirements of his patient."[18]

"Whenever a sample is taken for any test and charges are collected, it is implied that

the delivery of the test report will be the completion of "service" hired for. Without the delivery of the report, the 'service' will not be treated as completed or performed fully. It was the bounden duty of the said hospital to ensure transportation of the sample to the laboratory and to secure the test report to be handed over to the patient. Failure to do so, not once but twice, (with the patient being charged for the same, each time) is not only deficiency in service but gross negligence of in human nature." [19]

7. Emergency treatment:

"There can be no second opinion that preservation of human life is of paramount importance, as once the life is lost, the 'status quo ante' cannot be restored. The patient, whether he be an innocent person or a criminal liable for punishment, it is the obligation of those who are in-charge of the health of the community to preserve life.

We have no hesitation in assuring the persons in the medical profession that these apprehensions (of harassment by the legal and law enforcing agencies), even if have some foundations, should not prevent them from discharging their duty as a medical professional to save human life and do all that is necessary. We hope that the police, the members of the legal profession, our law courts and every one else concerned, will also keep in mind that the man in the medical profession should not be unnecessarily harassed for the purpose of interrogation or for any other formality and should not be dragged during investigations at the police station and it should be avoided as far as possible" ruled the Hon'ble Supreme Court in Parmananda Katara Vs Union of India.[20]

In Dr T.T. Thames Vs Elisa[21], the High Court of Kerala held that"Whenever a surgeon or a medical man advances a plea that the patient did not give consent for surgery or for treatment advised by him, the burden is on him to prove that the non-performance of the surgery or the treatment was on account of the refusal of the patient to give consent there to. A surgeon who failed to perform an emergency operation must prove with satisfactory evidence that the patient refused to undergo the operation, not only at the initial stage, but even after the patient was informed of the dangerous consequences of not undergoing the operation."

8. False and vexatious complaints:

In Morgan Stanely Mutual Fund Vs Kartik Das,[22] the Hon'ble Supreme Court has observed that "there is an increasing tendency on part of the litigants to indulge in speculative and vexatious litigation and adventurism which the Fora (consumer) seem readily to oblige. We think such a tendency needs to be curbed."

Again, in Brij Mohan Khera Vs Dr N.H. Banka,[23] the National Commission, while dismissing the complaint with maximum cost of Rs 10,000/- held that, "Considering the magnitude of the compensation claimed, this must have caused tremendous tension to the medical doctors concerned, disturbed their state of mind, shaken their confidence in their professional knowledge and skill and also disturbs them in their practice for

which they should be compensated.''

However, the Delhi High Court decreed that, "to express grievance strongly against a professional does not amount to defamation by any stretch of imagination. Difference of opinion on the basis of which the plaintiff alleged negligence on part of the defendants does not amount to defamation. Filing a case or raising a banafide controversy regarding the treatment given does not constitute defamation.''[24]

DEFENCES OF A DOCTOR IN A NEGLIGENCE SUIT:

1. No duty owed to the patient
2. Duty discharged according to the standard prevailing.
3. Misadventure, rather than negligence, as alleged.
4. Error of judgment
5. 'Res-judicata' i.e. the case was already decided in one court and hence cannot be tried in any other court.
6. 'Period of Limitation' of 2 years is over.
7. Contributory negligence (It is the concurrent negligence by the patient in addition to the negligence by the doctor, resulting in delayed recovery or harm to the patient. Negligence of both the parties having led to damage to the patient.) In the suit of malpractice against the doctor in such cases, the patient may loose in part or whole, his claim of damages against the doctor for any harm that ensued. However, the doctor is expected to foresee that this patient may harm himself and to warn him accordingly. Without giving such a warning, a doctor cannot plead the defense of contributory negligence.

DEFENSIVE MEDICINE: How far justified?

Any test or a therapeutic procedure that is got done with the primary intent of saving himself (the doctor) from the threat of medico legal liability or a negligence suit is termed as `Defensive medicine'. It has been condemned by all concerned and should not be resorted to as it results in over utilization of health care facilities, unnecessary hospital stay and leads to tremendous draining off of the patient's/relatives financial abilities as well as putting pressure on the nation's health bills.

CONCLUSION:

To conclude, the authors wish to reiterate precautions that must be undertaken to avoid a charge of negligence:

1. Do not guarantee a cure.
2. Maintain full and accurate medical records.
3. Get proper informed consent from patients.
4. Reasonable degree of care and skill should always be exercised.
5. Confirm diagnosis by appropriate and necessary Laboratory Tests
6. Advise immunization where ever necessary.
7. Perform sensitivity tests before injecting drugs likely to produce anaphylactic reaction.

8. Do not undertake any procedure beyond your skill.
9. Identify/Check the drug properly before injecting.
10. In cases of Death on Operation Table, inform the police for proper medicolegal investigation of the case.
11. Keep yourself updated.
12. Do not condemn or criticize the professional ability of other doctors.
13. Never issue false or misleading medical certificates.

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Non-heartbeating Organ Donation – Can We Balance Duty of Care, the Law and Recipient Need

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In response to a growing imbalance between supply and demand, the recently published Transplant Framework for England, *Saving Lives, Valuing Donors*,[1] proposes a return to non-heeartbeating donation (NHBD) as a key strategy to increase transplantation rates. Although this practice is very limited within the UK, such programmes are well established elsewhere,[2, 3] and graft survival figures, at least for certain organs, appear encouraging.[4] However, wider acceptance will depend on practitioners in intensive care and emergency medicine being convinced of an overall good beyond recipient need, economic arguments or even respect for the wishes of the card-carrying donor. The legislative and ethical hurdles are many and major,[5] and even if resolved, there remains a fundamental concern that benefit to a third-party inevitably generates a potential conflict-of-interest. This carries the inherent hazard of jeopardising public and professional confidence in clinical

areas which currently command respect and trust.

Staff in ITUs will be predominantly involved in the 'controlled' withdrawal of care category (see appendix).[6] Difficulties in this group include defining futility, providing defensible comfort care and determining the point of established death beyond which organ retrieval would be acceptable. A more rudimentary problem is resolving what can reasonably be accommodated under the terms 'best interests' and 'necessity', the principles at law which govern the care of the incompetent adult.[7] Although 'best interests' are not strictly limited to medical best interests,[8, 9] manoeuvres directed towards organ procurement and third-party benefit would stretch the conventional interpretation of these principles. The position to be adopted was clearly defined by the 1983 Code of Practice which stated; *'any tests or treatment carried out on a patient before he dies must be for his benefit and not solely to preserve his organs'*.[10] This principle was re-emphasised when the practice of 'elective ventilation'[11] was declared unlawful.[12]

The above directives, if rigidly applied, would exclude tests for tissue typing or screening of organ function, drug therapy such as antibiotics, steroids or heparin, and any escalation of cardio-respiratory support once a decision on futility had been made. Arguably, maintenance of support until such time as arrangements are in place to retrieve organs is also excluded. This principle was raised in the Bland case; *'where the responsible doctor comes to the reasonable conclusion……that further continuance of an intrusive life-support system is not in the best interests of the patient, he can no longer lawfully continue that life-support system: to do so would constitute the crime of battery and tort or trespass to the person'*.[13] The 'consent' of the next-of-kin would not alter this position, since they have no rights under English law to direct the medical management of an incompetent adult and the Human Tissue Act 1961 only bestows 'lack-of-objection' rights once the patient is dead.

Procurement from 'uncontrolled' groups, particularly Category 2 (see appendix), also generates difficulties on key issues such as futility, if only due to problems in reaching senior consensus decisions in emergency situations. The greatest obstacle however revolves around the determination of death, for which there is no statutory definition within UK law. However, medical arguments for brainstem death to be accepted as death itself, radically altered both concepts and definitions, it being declared; *"brain death represents the stage at which a patient becomes truly dead"*.[14] This stance was later reiterated by Pallis; *'A person is not dead unless his brain is dead. Arrest of the heart and circulation indicate death only when they persist long enough for the brain to die'*.[15] There followed judicial acceptance of the concept of brainstem death, albeit in case law rather than statute,[16] and legal commentators have subsequently maintained, in line with the above arguments, that brainstem death is the only true death.[17] This definition now creates differing problems

in the different non-heartbeating donor categories. The practice, in the uncontrolled categories, of continuing resuscitation manoeuvres after a declaration of death whilst organ perfusion is established,[18] is the most significant challenge to such a definition. A return of cognitive capacity is possible with restoration of cerebral perfusion and if death cannot be assured, then this activity could be construed as assault. If the patient were however considered dead, the practice still cannot be easily accommodated, since under the Human Tissue Act 1961, it does not constitute removal of organs for therapeutic purposes and a 'lack-of-objection' of the next-of-kin has not been confirmed. Given that this activity will inevitably be centred in units with a transplant retrieval service on site, potential 'conflicts-of-interest' are likely to be apparent.

The Transplant Framework does not refer to these donor subgroups or the inherent problems, simply stating (Para. 5.9); *'There are recognised differences in international practice and procedures relating to non-heartbeating organ and tissue donation. We will therefore work with relevant professional bodies to develop clear national guidance to support these programmes'.* The consultation document, *Human Bodies, Human Choices*,[19] is however identified as a basis for the ethical principles underpinning the proposals. This acknowledges the damage to *'trust between families and clinicians'* that occurred as a result of the retained organs scandal, recommends a *'culture of openness'*, and emphasises the place of *'properly informed, valid consent at the heart of future procedures'.* The stance taken, with regard to donation, appears contrary to these principles, no reference being made to any of the above considerations or the rising refusal rate which is the primary driver for new strategies. In stating that the *'involvement of families in consent procedures soon after death can impose on them an additional psychological burden'* (para 8.5) and that *'unwanted information should not be forced upon people'* (para 8.7), medical paternalism is promoted in a manner contrary to the alleged missive of correcting the omissions of the past. The suggestion that organ perfusion be made lawful (para 13 D), soliciting opinion on 'presumed consent' (para 13J), and asking (para 13.23); *'Given the present shortage of organs for transplant, should new legislation take account of the potential impact on those waiting for organs?'* clearly moves the emphasis towards third-party benefit, rather than respect for the autonomy of the individual and their next-of-kin.

This approach does not resolve the legal difficulties identified above and will if pursued, simply serve to compound the underlying ethical problems. Any change in legislation should be directed towards a robust definition of death and unequivocal interpretation of what can be accommodated under the term 'best interests', before, during, and after the process of dying. If respect for autonomy is to be the linchpin of defining 'best interests', the current simplistic donor card or electronic registration will have to be replaced with an explicit advance-directive detailing all the potential scenarios in which organ procurement

might take place and providing consent for the associated interventions. Detailed directives and endorsement of these principles by professional bodies and the law should thereby clarify 'best interests', but underlying conflicts-of-interest would still remain. The public may be understandably wary of enrolling for fear that once registered, process might be skewed towards organ retrieval rather than primary treatment.

Until these legal and ethical issues are clarified, it is questionable whether uncontrolled recruitment from Categories 1&2 can be defended. Practitioners within intensive care, contemplating organ donation from Category 3 patients, can follow one of two pathways;

1. Strict compliance with current law permits no delay in withdrawal of medical support and no interventions of any description if these are directed towards donation. This would not only compromise retrieval of organs at optimal viability, but prevent any tests as to that viability, a strategy incompatible with the ethical good of donation.
2. The practitioner may choose to depend on 'substituted judgment' instead of conventional 'best medical interests'. This relies on the opinion of the next-of-kin, as to which interventions they believe the patient would have been willing to undergo, in the interests of donating organs at optimal viability. This approach may be ethically defensible provided the next-of-kin are given comprehensive information and the time to absorb it. However, conflict with the position at law should be of ongoing concern for the clinicians involved.

If the critical care community is therefore to support these initiatives, resolution of the key issues must precede piecemeal introduction driven primarily by the need for transplantable organs. Non-heartbeating donation may at first sight appear to be an acceptable strategy to follow in order to increase donor numbers, and may in certain restricted circumstances be eminently defensible, but its complexity and potential adverse consequences should not be underestimated.

Appendix

Maastricht Classification of Non-Heart-Beating Donor (after Kootstra)[6]

Category 1: dead on arrival at hospital

Category 2: unsuccessful resuscitation

Category 3 (controlled): awaiting cardiac arrest eg after withdrawal of care in the critically ill

Category 4: cardiac arrest after confirmation of brainstem death

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