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Deadline for the July 2006 issue is 27 May, 2006.

Editorial: Global dialogue

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In this issue of the journal there are six papers from different corners of the world which illustrate the global coverage of bioethics. The journal has attempted to promote dialogue between regions and the fact that *EJAIB* articles are cited by authors around the world is a good sign of the global debate. As readers should be aware, the back (and current) issues are freely available in pdf file making it easier for readers to obtain copies of papers. This open access policy is also a good incentive to publish in *EJAIB*.

The first two papers are looking at bioethics issues in Islam, and show the interesting results of a survey of attitudes towards oocyte donation in Iran. The services offered to infertile couples has been approved and practiced, however, still a number even of academic experts are unaware of this. The concepts of health and illness in Islam are explored in the following independent article.

There are then two papers on biological questions, sociobiology and cloning. The last two papers report on surveys that examine the teaching of bioethics. Bioethics is being introduced into dentistry courses in Brazil, slowly but surely, at all levels of university education. The final paper surveys the results of teaching bioethics at Yamaguchi University medical school in Japan across all years of students. The question of when to teach bioethics is one that is often debated, and this paper shows that it can be taught at all years. The types of instrument used to examine attitudes range widely in the papers in the journal, and we do need to see the development of more instruments to examine more in depth concerns and attitudes of respondents.

Attitudes of Christians and Muslims to an Oocyte Donation Program in Iran

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Abstract

There are still controversial attitudes regarding oocyte donation (OD) programs. The aim of this descriptive study was to evaluate the opinions of Christians and Muslims regarding an OD program in Iran. 200 adults were randomly assigned to fill out the questionnaires. Part I contained demographic information, and Part II contained 20 questions to reveal their knowledge and attitudes about OD. 53% of the surveyed Christians and 69% of Muslims were married. The vast majority of the subjects had formal education; only 3 of them were illiterate. 74% of Christians and 59% of Muslims supported the OD for infertile couples. Also, 68% and 43% of the Christians and Muslims were unaware of their religious attitudes on practice of OD, respectively. Most of participants believed in informing the general public about OD in the mass media. In addition, nearly half of the participants were in favor of OD over adopting a child. Psychological counseling was strongly recommended by majority of respondents for both donor and recipient of eggs ($P < 0.001$). The majority had positive attitudes toward OD treatment for infertile couples. The mass media should develop programs for informing the public regarding the OD program.

Key Words: Oocyte Donation; Public Attitudes; Muslim; Christian; Iran.

Introduction

Six years after the birth of the first in-vitro fertilization (IVF) baby, the first pregnancy through oocyte donation (OD) was reported by Lutjen et al. (1984). With this event, a longstanding dream of many infertile couples and their caregivers became a reality. The most obvious group of women

seeking OD are those with pre-mature ovarian failure. A second category of candidates are perimenopausal women, who ovulate but their oocyte quality is impaired due to the aging process. Also, couples with poor oocytes or embryos, and those who have history of recurrent IVF failures and still have not become pregnant, may benefit from OD. Other candidates are women with ovarian cancer; those with known carriers of a genetic defect or disease that has a high likelihood of being passed on to their offspring. The final group is postmenopausal women that are usually in their forties or fifties who wish to experience motherhood and raise children (Skoog Svanerg et al., 2003; ASRM, 2004; Steiner and Paulson, 2006).

In general, couples, in particular women of any age group, have a strong desire to have children of their own. However, sometimes woman's infertility status may reach to the point that she has to get help from third party to overcome her infertility problem. Although, the infertile couples who are the right candidates for OD are usually in favor of overcoming their infertility with the aid of OD program; the attitudes of general public in different societies towards OD is still a controversial issue (Kazem et al., 1995; Steiner and Paulson, 2006). This could be even more complicated in Islamic societies where some may even believe that third party reproduction is not permissible under Islamic rules or forbidden by the legislative law (Serous and Omran, 1992; Isikoglu et al., 2006). However, OD has been legally offered to married infertile couples in Iran for the last several years. To our knowledge, there has been only one report on the attitudes of Muslims toward the OD program (Isikoglu et al., 2006). Therefore, the aim of this survey was to investigate the attitudes of both Christians and Muslims living in Iran towards different aspects of OD. This will offer them the opportunity to voice their opinion on OD offered for infertile couples who are keen to raise children.

Material and Methods

This descriptive study was designed to evaluate the attitudes and knowledge of Christians as well as Muslims on different aspects of OD. This questionnaire-based survey was carried out in Jolfa district of Isfahan city, Iran in 2005. Jolfa is populated with both Christians (Armenian Orthodox) and Muslims. The Christians are mainly populated in the capital city of Tehran and Isfahan city.

The study population comprised 200 adults of both sexes (100 Muslims and 100 Christians) of ages 18-65, randomly assigned to participate in this questionnaire-based study. All married participants were fertile, with no sign of infertility. The questionnaire form consisted of two parts. Part I contained questions to determine the general demographic characteristics of the participants. Part II consisted of 20 multiple-choice questions to reveal both knowledge and attitudes of respondents about application of OD program in Iran. The study was approved by our university research ethics committee. For analysis of data, chi-square test was used to compare to results generated between Christians and Muslims, and $p < 0.05$ was considered statistically significant.

Results

Demographic Information

Fifty-nine percent of Christians and 94% of Muslims were women. Also, the majority of participants were married, while 5 individuals were divorced (Table 1). 39% and 19% of the Christians and Muslims were housewives, respectively. Also, 11% of Christian women and 65% of Muslim women were employed. In addition, the majority belonged to the age group of 18-39, which represents the population of reproductive age.

Table 1: Demographic characteristics of the participants.

	Christians (n=100)	Muslims (n=100)
Marital Status		
Single	44	29
Married	53	69
Divorced	3	2
Have Children	38	62
Educational Level		
Illiterate	2	1
High School	57	28
University	41	71
Age Group		
18-29	48	35
30-39	24	31
40-49	25	28
50-65	3	6

Table 2: The participant's background and knowledge about oocyte donation.

1. Is there any of your friends or family members affected with infertility?	<i>Christians</i>		<i>Muslims</i>				
	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Difference (P)</i>		
	37	63	49	51	n		
2. Do you think that the infertility is a woman's problem? (DK= Don't know)	<i>Yes</i>	<i>No</i>	<i>DK</i>	<i>Yes</i>	<i>No</i>	<i>DK</i>	<i>Diff.</i>
	82	16	2	80	20	0	n
3. Do you know what exactly "oocyte donation treatment for infertility" means?	<i>Yes</i>	<i>No</i>		<i>Yes</i>	<i>No</i>	<i>Difference (P)</i>	
	46	54		48	52	n	
4. Do you support the oocyte donation program for infertile couples?	<i>Yes</i>	<i>No</i>		<i>Yes</i>	<i>No</i>	<i>Difference (P)</i>	
	74	26		59	41	<.05	
5. Have any of your friends or relatives had oocyte donation treatment?	<i>Yes</i>	<i>No</i>		<i>Yes</i>	<i>No</i>	<i>Difference (P)</i>	
	22	78		11	89	<.05	
6. Would your religion accepts oocyte donation for infertility treatment?	<i>Yes</i>	<i>No</i>	<i>DK</i>	<i>Yes</i>	<i>No</i>	<i>DK</i>	<i>Diff.</i>
	24	8	68	27	30	43	n, <.01
7. Do you think that it is better to adopt a child than to try and have one via oocyte donation?	<i>Yes</i>	<i>No</i>	<i>DK</i>	<i>Yes</i>	<i>No</i>	<i>DK</i>	<i>Diff.</i>
	23	51	21	39	59	2	n,n,<.01
8. If you would remain childless, do you think that it would have an impact on your relationship with your spouse (if single, just guess)?	<i>Yes</i>	<i>No</i>	<i>DK</i>	<i>Yes</i>	<i>No</i>	<i>DK</i>	<i>Diff.</i>
	47	27	26	59	20	21	n
9. If you had an oocyte donation child, would you inform your friends and relatives?	<i>Yes</i>	<i>No</i>	<i>DK</i>	<i>Yes</i>	<i>No</i>	<i>DK</i>	<i>Diff.</i>
	25	46	29	24	55	21	n
10. If you were childless, would you enroll for OD program to overcome your infertility?	<i>Yes</i>	<i>No</i>	<i>DK</i>	<i>Yes</i>	<i>No</i>	<i>DK</i>	<i>Diff.</i>
	37	29	34	32	39	29	n
11. It is important for me that my child looks like myself.	<i>Yes</i>	<i>No</i>	<i>DK</i>	<i>Yes</i>	<i>No</i>	<i>DK</i>	<i>Diff.</i>
	37	46	17	66	34	0	<.001
12. Recipients are usually concerned about whether a donor may try to find the baby and claim it as her owns. Do you think that donor has the right to do so?							

Yes	No	DK	Yes	No	DK	Diff.
21	47	32	16	60	24	n
13. If people need oocyte donation, the treatment should be kept between the couples and their physician, only!						
<i>Agree</i>		<i>Disagree</i>		<i>Agree</i>		<i>Disagree</i>
81	19	94	6			<.05
14. A child should never know that he/she is born as a result of oocyte donation.						
<i>Agree</i>		<i>Disagree</i>		<i>Agree</i>		<i>Disagree</i>
74	26	87	13			n
15. I think that genetics play some role in what we are; however, the way we are brought up (environmental influence) is more important.						
Yes	No	DK	Yes	No	DK	Diff.
55	24	21	59	21	20	n
16. I think that it is possible for a mother and father to love and care for an oocyte donation child as much as a genetic child.						
<i>Agree</i>		<i>Disagree</i>		<i>Agree</i>		<i>Disagree</i>
87	13	92	8			n
17. Do you think that recipient of oocyte should know the name and address of oocyte donor?						
Yes	No	DK	Yes	No	DK	Diff.
36	40	24	45	47	8	n,n,<.01
18. Is it necessary to have psychological counseling for both recipient and oocyte donor?						
Yes	No	DK	Yes	No	DK	Diff.
63	22	15	87	6	7	<.001
19. Only the women under age of 40 years / or under no circumstances should be the recipient of oocytes.						
<i>40yr no circumstances</i>			<i>40yr no circumstances</i>			
76	24	75	25			n
20. Do you agree with advertisements on OD program in the mass media?						
Yes	No	DK	Yes	No	DK	Diff.
57	18	25	60	26	14	n

Knowledge and Attitudes Towards Oocyte Donation

Half of the subjects were unaware of the OD program in Iran. There was an insignificant difference in the level of knowledge between two groups of respondents. However, 74% and 59% of the Christians and Muslims were supporting the OD treatment for helping childless couples, respectively. Although, none of the respondents were infertile, over one-third of them knew a friend or relative struggling with infertility problem. Most of the participants claimed that if they had a child by OD, they would never tell their friends or family members about it. There was an insignificant

difference in the response between the two religious groups with regard to this question.

In addition, more than half of the participating individuals believed that OD was a better option than adopting a child. There was no significant difference between Muslims and Christians with regard to this opinion. They also agreed that infertility was not necessarily the women's problem only. Half of the participants thought that childlessness would have an impact on the relationship with their spouses. The majority of the subjects thought that although genetics play some role in what we are, but the way we are brought up was more important. Also, the vast majority of participants thought that couples can love their child resulted from OD as much as a genetic child.

Muslims were significantly more in favor concerning the importance that the child should physically resemble them. Also, respondents with children of their own (38% and 62% of Christians and Muslims, respectively) had less positive attitudes towards having children for childless couples than those without children.

Religious issues on oocyte donation

More than 65% of the Christians and nearly half of the Muslims were unaware whether their religion would permit OD or not. 8% of Christians and 30% of Muslims thought that OD is not permissible by their religions (P<0.01).

Disclosure to the child

The vast majority of the respondents reported that the knowledge of the infertility treatment with OD should be restricted to the couple and their doctor only, and the offspring should never be informed about it. Only 26% of Christians and 13% of Muslims believed that the child has the right to know about his/ her genetic ties.

Objections towards oocyte donation

Over 40% of Muslims were opposed to OD. They strongly rejected the practice of OD to overcome infertility. Other alternatives, such as child adoption was recommended by the majority of this group of OD opponents. Also, 26% of Christians disagreed with OD program.

Right of Oocyte Donors

Almost half of the Christians were of the opinion that the oocyte donor has no right to claim the child and should therefore not cause any trouble for the receiving couple. This rate was increased to 60% among Muslims. Also, one-third of participants were in favor of the idea that women under no age limit may receive donated oocytes.

The majority believed that women of reproductive age should seek OD.

Discussion

The practice of OD involves religious, ethical, social, and psychological issues. Different aspect of OD program such as, knowledge of general public, known and anonymous donors, age limits for donors and recipients, secrecy or disclosure to the children of OD have been debated since the introduction of OD (Kazem et al., 1995; Westlander et al., 1998; Skoog Svanberg et al., 2003b; Purewal and Van den Akker, 2006). The results generated from this study showed that the majority of Iranian public, with different religious background, support OD as an alternative way of overcoming infertility, a finding in line with the results of Isikoglu et al. (2006) from Turkey, and Westlander et al. (1998) from Sweden. The positive attitudes towards OD may be due to the fact that it implies a biological link between the offspring and both parents. Although, the recipient is not genetically linked, her husband has genetic contribution. In addition, she carries the fetus biologically, and takes care of the nursing. This shows that people, in general, give the priority of having a full family with children. In family-based culture, such as ours, infertility is considered as a major public problem which may affect the spouse relationships or even threat their marriage. This stressful situation becomes even more serious when the wife is encountered with infertility (Yassini et al., 2005). Therefore, it seems that whether the legislation restricts the practice of OD in Islamic countries, such as Turkey, or legally permits it, like in Iran, general public are usually in support of third party assisted reproduction treatment for the right candidates.

Our study also showed that half of the participants did not know what exactly OD program mean. This proportion was higher than that found by Isikoglu et al. (2006). This may be related to the fact that in their study, the participants were offered explanation on OD prior to completion of the questionnaires. Although, both groups had positive attitudes, significantly more Christians than Muslims were in favor of OD offered to needy infertile couples. In their survey, Skoog Svanberg and co-workers observed that two-thirds of the respondents were supporting OD (2003b). Therefore, it seems that the public in societies with even different ethnic or religious background are usually in support of OD practice. However, the

main differences between Muslim versus some non-Muslim countries, is that the public from Islamic societies support the OD only for married infertile couples, and not for partners or homosexuals.

As far as the religious issues are concerned, almost two-thirds of Christians and nearly half of the Muslims did not know whether their religions permit OD or not. In Iran, however, both Muslims and Christians religious (Armenian-Orthodox) scholars have already permitted the practice of OD for married infertile couples. This is because third party reproduction is not involved with sexual relationship- only oocytes are donated for treatment purposes. This will definitely assist the childless couple to enjoy the fulfillment of their family, and limit the worries about their possible marital crisis. Therefore, this may challenge the religious scholars and legislations from other countries to give the issue more thoughts. Our findings showed that there was not so much difference between Christian and Muslim community towards their reaction to OD. This may point to the fact that people's attitude towards OD is generally not based on the religion. It seems their opinion is mainly based on costumes or traditions that are common between people from different religions within a country. Therefore, it is good to study a religious group that based on their religion OD is not permitted. Then, one maybe able to conclude how much religion influence people's opinion regarding third party reproduction.

Sometimes, the recipients have worries about the donors. One concern is that she will not be able to separate emotionally from her eggs, and that as pregnancy progresses, the growing fetus will feel like her own child. Our data indicated that the majority of our respondents believed that the donors did have the right to claim the offspring, which is in line with previous report (Isikoglu et al., 2006). Another important issue to point out is disclosure or non-disclosure to the children of OD treatment. The question of the OD children's right to know their true identity has generated worldwide discussion. The parents are usually confused about when and how to tell the child about his/ her origin (Appelgarth et al., 1995). The majority of the respondents believed that the children should not be aware of their origin. Our results also showed that Muslims were more positive towards not telling the child than Christians were. Therefore, our respondents believed that it is not necessary to inform the child that she/ he is the result of OD. However, some known donor ovum couples choose

to be open about sharing the information with others, including the child. Those who choose to be open with their child do so because they feel comfortable with using a third party for purposes of reproduction, and they want to maintain an open, trusting relationship with their child. Finally, they believe that their child has the right to know about his/ her genetic origins for medical as well as psychological reasons (Appelgarth et al., 1995). Couples who decide to keep the donation a secret, fear that the child would be confused to learn that the gestating-rearing mother and the genetic mother were not the same person. They may also fear that their child would become angry and reject the mother if she/ he were to learn the truth. Finally, they worry that the child may not be accepted as readily by others such as family members, friends, and acquaintances (Abdalla et al., 1998; Rumball and Adair, 1999). Whereas most countries, such as ours, continue to support the anonymous donation, children have the right to receive information about the donor in Sweden (Skoog Svanberg et al., 2003).

The purpose of the counseling is to assess the psychological readiness of the couple to undergo OD and to help the couple anticipate the short and long term social, psychological, and ethical implications of OD (ASRM, 2002). The American Society for Reproductive Medicine (ASRM) guidelines for OD recommended comprehensive psychological assessment for donors as well as recipients of oocytes. This is to ensure that they will be fully aware of all relevant aspects of the assisted reproduction with OD (ASRM, 2002). The vast majority of our respondents believed that psychological counseling is necessary for both oocyte donor as well as recipient. Only 6% of Muslims disagreed with the counseling issue. Counseling offered to recipients are to make sure they are giving informed consent, are aware of the medical and the psychological risks involved, and understand the ethical and emotional issues involved in creating families through the process of OD (Braverman, 1993).

Another controversial issue is related to the age of the oocyte recipients. Among the respondents in our survey, over 75% stated that recipient of oocytes should be under the age of 40. It seems that general publics feel that it is not fair to children to be raised by parents who look and probably act much like grandparents. It may also leave the children with worrisome about the adolescent years. As a result, our respondents

considered an age limit for recipients in OD program.

In conclusion, the majority of respondents support the OD as an alternative way of starting a family for childless couples. Since, the majority of participants were unaware of their religious opinion regarding OD, more discussion should be stimulated among them. Also, the mass media should play more active role in informing the public about the OD in assisted reproduction.

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Health, Illness and Medical Bioethics: An Islamic Perspective

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Health and Disease: Islamic Definitions

The study of medical bioethics and ethno-medicine has been a focus of increasing study in the West over the last two decades, and has highlighted, among other things, the diversity of bioethical frameworks. An anthropology of medical bioethics (Casper & Koenig 1996; Inhorn 2003; Turner 2003; Marshall 1992, 1994, 1998; Marshall & Koenig 1996; Das 1999; Brodwin 2001; Gold 2003; Unschuld 1979; Muller & Desmond 1992; Pellegrino, Mazarella & Corsi 1992; Shrewder 1990; Kaufert & O'Neil 1990; Muller 1994) has revealed not only the diversity of non-western medical systems but also how ethical concerns are constituted in their medical approaches. Another significant area of anthropological analysis has been the role of cosmology in non-western medical systems in shaping peoples' understandings of health and illness. The fact that many non-western approaches do not privilege a pathogenic understanding of disease should pique further anthropological inquiry into different human modes of being. In this paper, I will examine the relationship between

medical bioethics and health and illness from an Islamic medical perspective.

A study of Islamic understandings of health and illness must begin with an analysis of the concept of *Tawhid* (Divine Unity) which underpins Islamic science and informs Muslim social relationships. The philosophy of *Tawhid* professes the oneness of God (Allah) and the unity of creation. According to Sharia'ti (1979), as the organisational principle of existence, *Tawhid* extends to scientific and social domains whereby nature, humanity and knowledge are understood as unities.¹ Nasr elegantly states this principle:

*The spirit of Islam emphasizes, by contrast, the unity of Nature, that unity that is the aim of the cosmological sciences, and that is adumbrated and prefigured in the continuous interlacing of arabesques uniting the profusion of plant life with the geometric crystals of the verses of the Quran.*²

In this scheme, the self's communion with nature is vital in order to understand its relationship with the Divine. As Nasr notes, "Nature is a fabric of symbols" or signs (*ayat*) "which must be read according to their meaning,"³ and which reveal the Divine presence.

The social expression of *Tawhid* is depicted in the Muslim community (*umma*) who follow the five pillars of Islam which unite all Muslims. These are: declaration of faith (*shahadah*) which affirms the Oneness of God; daily prayer (*salat*); fasting during the month of Ramadan; charity (*zakat*); pilgrimage (*hajj*) to the holy city of Mecca.

Islam professes that human beings have been given stewardship of the earth (*caliph-fil-ard*) (*Qur'an* 2:30), a role which obligates them to act ethically between each other and the non-human world. Furthermore, human beings have been endowed with intellectual (*aql*) and spiritual

¹ The *ka'ba* at Mecca is a prime example of Eliade's notion of 'the sacred centre, embodying the notion of *Tawhid* in its spiritual and symbolic dimensions.' The idea of the centre is ubiquitous in Muslim societies and is symbolised by the holy *ka'ba* located at Mecca, being the most sacred shrine in Islam. For Muslims, the *ka'ba* is considered as the "omphalos of the world, the navel of the earth" the sacral point of the world's beginning, and the nexus between heaven and earth (Akkach 1995:93). As Eliade points out, "The centre is first and foremost, the point of 'absolute beginning' where the latent energies of the sacred first broke through; where the supernatural beings of myth, or the gods or God of religion, first created man and the world. Ultimately all creation takes place at this point" (Eliade 1957:37).

² Nasr (1969) <http://www.fordham.edu/halsall/med/nasr.html>

³ Ibid.

faculties which assist in informing them between ethical and non-ethical behaviour.⁴

In Islam, the human body is bi-morphic, a plenum composed of spirit (*ruh*) and matter, or otherwise, a threshold (*barzakh*), conjoining the material (mineral, vegetable, animal) and celestial kingdoms.⁵ Like Judaism and Christianity, Islam views the body in terms of a "theological holism"; an "organic totality and in its fundamental integration with the person" (Campbell 1998:277). Medieval Muslim scholars even posited a correspondence between the human body and the universe, or what the Greeks referred to as *mikrocosmos* (small world). Islam's emphasis on the body's integrity is based on the notion of the final judgement of humanity. On the Day of Reckoning "God will require each part of the human body to account for the actions of the person whose bodily organs they formed" (Campbell 1998: 293; Sachedina 1988).

The body also possesses a soul like entity referred to as *nafs* (lower self, base self) which has various meanings. Firstly, there is the *nafs* which incites humans to commit sin (*an-nafs al-ammāra bi'-su'*); "the soul commanding to evil" (Qur'an 12:53) (Schimmel 1975:112). Secondly, there is the *nafs* as the "blaming soul" — *an-nafs al-lawwāma* (Qur'an 75:2), which corresponds to the human conscience; and thirdly, the *nafs* after having been purified (*mutma'inna*) (Qur'an 89:27). In this state, the *nafs* is purged of any incendiaristic qualities, and is "at peace" with Allah.⁶

Consequently, the unique psycho-physical makeup of human beings makes them susceptible to an array of physically and spiritually caused illnesses. Here, the role of ethically based behaviour is crucial in maintaining health. Islamic medicine which was influenced by Greek, Persian and Vedic medical systems (Levey 1967), and which informs modern Muslim medical understandings views health as a balance between psycho-physical energies. An imbalance of these

energies leads to the onset of disease. Illness may also be viewed in various Muslim societies as both a cathartic ordeal (Daar & Khitamy 2001) or a Divine punishment for moral transgressions (Saniotis 2002). In the later, Saniotis (2002) found that Indo-Muslims had a taxonomy for spiritual illnesses which were caused by moral breaches of *Shariah* (Islamic canon). Moral infractions included illicit sexual relations or failing to perform prayer ablutions (Saniotis 2002). Moreover, the management of health is contingent upon leading a life of moderate behaviours.⁷ Both the *Qur'an* and the prophetic traditions (*hadith*) offer verses encouraging moderation in eating and drinking.⁸

Muslim concern with moderation has placed an onus on physical and spiritual purity. The body in Islam is meticulously controlled by an ongoing repertoire of body techniques that are aimed towards a "complete and absolute cathecting or investment of the body" (Saniotis 2002, Bouhdiba 1985:56). Several techniques may be employed to free oneself from physical pollution (i.e. dirt, bodily excretions) including religious ablution (*wuzu*), reciting of religious formulas, wearing of clean clothes, keeping one's surroundings clean, keeping the orifices clean, and bathing after coitus (Saniotis 2002). What is important is that the body must be restored to its previous state of purity, since it is only through this state that the believer can continue their "quest for spirituality" (Saniotis 2002, Bouhdiba 1985:55).⁹ The point here is that bodily purification, or its lack, is coextensive with the pan Islamic view of health as being physically and morally based. The famous Islamic saying, "Cleanliness is part of faith. Dirt is the work of the devil" (Bouhdiba 1985:55), poignantly sums up this prevailing attitude (Saniotis 2002).

Islamic Interpretive Frameworks

The theoretical and interpretative frameworks of Islamic bioethics are based on primary and

⁷ Al Khayat (1995:447-50).

⁸ "And eat and drink and waste not. Truly, Allah loves not the wasteful" (Qur'an 7:31). Al-Miqdad ibn Ma'ad Yakrib narrated what he heard the Messenger of Allah say: "no human ever filled a container more evil than his belly. The few morsels needed to support his being shall suffice the son of Adam. But if there is no course then one third for his food, one third for his drink and one third for his breath." (Ahmad and Tirmithi). (Found in Islamweb, "Eating and Drinking in Moderation")

⁹ <http://www.islamweb.net/ver2/archive/article.php?lang=E&id=39>
 "A material, physical, psychological or moral pollution is never final in Islam and the purpose of the purificatory techniques is to restore man to his original purity" (Bouhdiba 1985:43)

⁴ "We shall show them Our portents on the horizon and within themselves until it will be manifest unto them that it is the Truth" (Qur'an 41:53).

⁵ Nasr (1964:96), gives an erudite treatise on the Islamic concept of "Man is a symbol of Universal existence" (*al-insān ramz al-kullī*) (*al-insān ramz al-kullī*) (*wujud*).

⁶ Al-Kubra (1958), provides a comprehensive exegesis on the various kinds and stages of the *nafs*. Medieval Islamic physicians and philosophers compared the *naiifs* with *ether*, which was believed to be "emitted from the heart" and transported via blood throughout the body "giving it life" (Phillips 1989:17).

secondary sources. Primary sources of Islamic bioethics include the *Qur'an*, *Sunna* (prophetic traditions, encompassing the Prophet Muhammad's words and acts) *ijmaa* (public consensus) and *qiyas* (intelligent reasoning which are ruled on events not mentioned in the *Qur'an* or *hadith*) (Serour 1998). Secondary sources are *shariah*, the legal extension of the *Qur'an*, *urf* (local tradition), and *maslaha* (public interest) (Daar & Khitamy 2001, Zali Shahraz & Borzabadi). These normative categories can be classified according to a "five fold model of obligation" (Carney 1983:167): moral acts (*halal*), permissible acts (*mubāh*), recommended acts (*mandūb*), discouraged acts (*makrūh*), and forbidden acts (*haram*) (Carney 1983:163). The "normative content" of these categories may be further divided as virtue (*fadīlah*) and good character (*khuluq hasan*) (Carney 1983: 168).

Hathout (1991) and Serour (1998) concur that the bioethical aims of *shariah* focus on the protection and preservation of life, health and procreative aspects which have been recently given increasing attention by Islamic scholars and physicians due the advent of bio-medical technologies. Sachedina (1990:108) claims that the emphasis on tradition and observance of *shariah* "has been a source of criticism in contemporary Muslim society". Consequently, some Muslim commentators have suggested that the implementation of *naskh* (abrogation, repeal) as a mechanism for giving *shariah* a "dynamic element" (Sachedina,1990:108) is crucial for keeping Muslims in line with new medical technologies.

While bioethics in the *Sunni* and *Shia* branches of Islam have been historically enunciated by the *ulama* (Islamic body of clerics), such definitions are contingent on the level of scholarly knowledge and qualification of clerics. On this note, *Shia* and *Sunni* bioethical rulings do not represent a central body of knowledge which are henceforth promulgated to the *umma*. Denny (1994:1069) indicates that Islamic jurisprudence (*fiqh*) "is not a centrally co-ordinated, unified process, given the diversity of the Muslim diaspora and its "sub-communities". This is problematic due to linguistic differences and other socio-cultural and national markers which act to separate Muslims. Despite these social barriers an onus is placed on Muslim physicians to be aware of clerical rulings where they apply to their medical fields.

Another issue concerns the differences in bioethical rulings between *Sunni* and *Shia* Muslims even in "minor issues" (Ainuddin 2004). A case in

point was the ruling on whether animals should be cloned or not. In 1997 Abdelmo'ti Bayyumi, a *Sunni* theologian from Al-Azhar University asserted that it is "forbidden to clone animals" (Weiss 1997). "However, in contrast other Muslim religious leaders testified before the National Bioethics Advisory Commission that embryo and cloning research" might assist in providing discoveries "to counter infertility"(2006).

Muslim Responses to Western Bio-Medicine

The advent of western biomedicine has been a serious challenge to both Muslim bio-ethicists and physicians. In many respects Western medicine was a handmaiden of European colonisation of the Muslim world (*circa* 18th century). Prior to this period Muslim countries had their respected medical systems such as *unane* and *hakimi* medicine which had been influential in the establishment of western medicine during the European renaissance (1450-1550). These models which came under the ambit of Islamic medicine were holistic in their views of the body and treatment of disease. Impelled by the belief of their intellectual and moral superiority, Europeans viewed these systems as inferior and successfully marginalised Islamic medicine via establishing western medical schools. By the mid twentieth century Islamic medicine was a pale shadow of its former glory.

The foundational ideas of European medical knowledge and practice were antithetical to Islamic medicine. The western bio-medical notion of the body was posited on Cartesian dualism which viewed the body as a machine, lacking theomorphic and spiritual qualities. As Abram (1997:49) notes, Cartesianism condemns the body to the tyranny of a "predetermined mechanism." The western medical 'gaze' advanced medical specialisation and its cavalcade of specialists. "It presented [the practical knowledges of medicine] as the restitution of an eternal truth" (Foucault 1975:57). Bodily disease was considered as arising from pathological causes which could be carefully observed, defined and categorised by the new empirical discourse. New Medical discoveries accompanying the Human Genome Project have reaffirmed this medical discourse.

The globalisation of new medical technologies has prompted the Muslim world to respond. Thus far, responses by Muslim thinkers and physicians have varied. In 1981 Muslim physicians created an Islamic Code of Medical Ethics in order to deal

with “organ transplantation and assisted reproduction” (Daar & Khitam 2001).¹⁰ The oath included the protection of human life under all circumstances, and prohibiting euthanasia and doctor assisted death (Daar & Khitam 2001). Muslim states such as Iran have drafted a government clause act 27, “Protection Code of Human Subjects in Medical Research”. This act safeguards the privacy of information and protection of individuals in medical research (Zali, Shahraz & Borzabadi 2002). The Iranian National Commission for UNESCO has also drafted a 16 clause guideline for co-ordinating universities, ministries and research centres “with bioethical issues” (Zali, Shahraz & Borzabadi 2002).

While there has been an increase in conferences on emerging bioethical issues in Muslim countries,¹¹ the scale of “commercialisation of science,” along with its multinational backing is threatening Muslims to choose between traditional knowledge and western technological prowess (Simitopoulou & Xirotiris 2003). Simitopoulou & Xirotiris (2003) observe that the global demand for scientific research in new medical technologies has the tendency to neglect cultural sensibilities. This view is corroborated by Nasr (1996) who states:

Non-Western societies are forced into a global “economic order” within which they have little choice but to follow models of so-called development that are formulated in the West and in which non-Western religions and philosophies hardly play a role.

In short, Muslims are being increasingly faced with global medical realities which are propped by profits, as well as, by personal circumstances which force Muslims to try out new medical technologies even though at the risk of contravening *shariah*.

Another dilemma facing Muslims is the lack of medical research in Muslim countries. Nasim (2000) declares that in the Human Genome Organisation only four Muslim countries were represented. Similarly, “the dismal state of Science and Technology” in Muslim countries is reflected in the statistic that the “entire Muslim world contributes 1.033 percent to the international literature as opposed to 1.059 and 1.64 by small

European countries like Belgium and Switzerland” (Nasim 2000).

A third problem facing Muslim countries deals with the unrivalled dominance of the western biomedical model. Nearly all Muslim medical schools train physicians in western medicine. Training in Islamic medicine, albeit, a worthwhile endeavour does not have the same kind of social status and lucrative financial rewards as compared to medical graduates trained in western medicine. The onus on “pioneer research” which is supported by multinational companies further draws Muslim students towards western medicine (Simitopoulou & Xirotiris 2003). Athar insists that medical schools should be encouraged to incorporate aspects of Islamic medicine within medical curricula. The inclusion of Islamic medicine with its emphasis on spiritual values and concern with curing disease is essential for Muslim medical graduates (Athar). For example:

In terms of pharmacology, there is no reason as to why we cannot incorporate some of the Yunani (Greek) practices in medicine, along with necessary Western medicine; there is no reason as to why we cannot include prayer, meditation, and dhikr, along with psychotropic medicine for psychological illnesses (Athar).

Furthermore, a knowledge and practice of western medicine is insufficient in understanding the connection between bodily disease and the soul; the former often occurring due to “abnormal lifestyle or a spiritual problem” (Athar).

A fourth area of concern is the need for a consensus among Muslim physicians and clerics on contemporary issues of medicine in relation to abortion, termination of life, organ transplantation, surrogate parenting and care of AIDS and homosexual patients (Athar). I would also assert that the combination of scientific and religious viewpoints is necessary in order to represent the diversity of socio-religious backgrounds of modern Muslims. Dirie (2004) goes further in calling for the establishment of independent Islamic bioethics panels. These panels would be inter-disciplinary and act as an advisory role to governments and communities (Dirie 2004). Ainuddin (2004) also endorses the formation of National Bioethics Committees (NBCs) in order to keep in line with “rapid technological advances.” These NBCs should comprise individuals from scientific, religious, educational, business and public sectors. Even where NBCs exist in some Muslim countries, these need to be given momentum (Ainuddin

¹⁰ See also, The Islamic code of medical ethics. *World Med J* 1982, 29(5):78-80.[Medline]

¹¹ “The Islamic Organization for Medical Sciences (www.islamset.com), based in Kuwait, also holds conferences and publishes the *Bulletin of Islamic Medicine*” (Daar & Khitam 2001).

(2004). Finally, Dirie (2004) proposes training of professional Muslim bioethicists who are well versed in Islamic and western medical approaches and in new medical technologies.

Conclusion

The Islamic approach to biomedicine represents a complex religious, philosophic and scientific system of healing. Islamic medicine fosters a holistic approach, which views the body as a unity of psycho-physical energies. The body as a unified plenum between matter and spirit is further informed by *Tawhid*, the leitmotif of Islamic philosophy and practice. Consequently, illness is viewed as an imbalance or maladjustment between the physical and spiritual dimensions of the body.

The advent of the western bio-medical model in many cases superseded Islamic medicine as the predominant medical model while provoking new kinds of bioethical issues. The Cartesian principle of western medicine views the body in mechanistic terms or what Foucault refers to as "body as a machine." Such an approach devalues the Islamic notion of the "organic unity" of the body and soul while emphasising the pathogenic cause of disease and illness.

At present, the Muslim world has yet to establish a set of bioethical standards and values which can be applied to all Muslims. While individual Muslim nations such as Iran have heralded a unified approach to bioethics which includes educational, religious and public sectors, more work in other Muslim nations is needed. The growth of new medical technologies has prompted some Muslim physicians to establish a Muslim code of ethics which informs their medical practice. As medical technologies in the area of genetic engineering further develop, Muslims will need to take a more proactive approach in order to counter the ethical paradoxes that such medical technologies may engender.

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Need to Redefine Sociobiology

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Sociobiology is defined by Alcock (in his book “*Triumph of Sociobiology*”, Oxford University Press, 2001, p. 1 – 257, as cited by Miller III, 2005) as “encompassing a Darwinian adaptionist approach towards understanding behavior in some obviously social and many not so social species”. But there is need to broaden this definition to cover other principles and theories of Biology in context with the human species, as it will become obvious in the following discussion. In relation to humans the definition of Sociobiology may read as: “Sociobiology is consideration of human behaviour and problems in view of biological principles and theories”. Since we are a part of the organic world, principles and theories of Biology are applicable in our case, as also for non-human animals.

When considering human phenotype, including behaviour, it is necessary to bear in mind the general biological principle that phenotype results from interaction between the genotype and the environment. To bring home this point Miller III has cited this example: “... a human baby possessing genes for predisposing it to a tendency for phenylketonuria need not be mentally retarded, provided this predisposition is recognized early on and the baby is put on a diet free of phenylalanine”. Administration of a special diet is obviously an environmental factor.

Darwinian slogans, like “struggle for existence” and “survival of the fittest” do not apply in many cases of human individuals or populations, as the Darwinian selection is based on genetic variations, while much of variations among human individuals/ populations are due to cultural/environmental factors.

As has been indicated in the previous paragraph, when dealing with human problems, consideration of environmental influences on a developing individual/ population is important, because such influences are extensive, due to the following reasons: (1) a very long period of postnatal association with parents and family, (2) institutionalized learning, (3) medical aid, (4) rich communications between generations and consequent cumulative tradition or social memory (Verma and Saxena, 2000), and (5) varying economic environments.

An ecological principle is that, when resources increase, population size increases. But, as Alcock points out (cited by Miller III, 2005) this principle does not exactly hold for many human families, as educated, well to do and elite families choose to have fewer children. This deviation from the principle has an obvious advantage. When children are fewer, they may receive better parental/ family

attention, and the family may afford quality education for them.

A population may collapse due to overexploitation of environmental resources. An ecological principle is that, if a population size increases considerably beyond the carrying capacity of the environment, there is a sudden decline or collapse of the population (fig. 1). To illustrate this situation J. Diamond (in his book “*Collapse: How Societies Choose to Fail or Survive*”, Viking Books, 2005, reviewed by Anonymous, 2005) cites the example of the human population in the Easter Island. The original population of the island collapsed three centuries ago, mainly due to deforestation. Large trees were extensively cut down for making and erecting those huge stone human images, which required a lot of logs. Besides the aborigines used wood for cooking, for cremation of their dead, and for making canoes to venture out into sea for fishing. Soon the forests in the small island dwindled. As the resources

declined, the population increased. The result was a collapse. Such an ecological suicide has been given a new term by Diamond, “ecocide”.

Another example of population collapse is that of the Pacific island of Rwanda (Anonymous, 2005, reviewing Diamond’s book). This small island was overpopulated with its 2000 inhabitants. There were two tribes among them, Hutus and Tutsis. In 1994 the leading politicians were Hutus, and they were extremists. They goaded Hutus to kill Tutsis, and there was a genocide, leading to the last Tutsi getting killed. 5% Hutus also lost their life. “His (= Diamond’s) point is merely that when people are starving because they do not have enough land, it is surely easier to persuade them to kill their neighbours” (Anonymous, 2005). It is an ecological principle that, when the population size exceeds the carrying capacity of the habitat, a population crash is inevitable (vide supra). In an overcrowded cage rats may turn cannibalistic.

Economic environment also decides whether a population survives and prospers or collapses. Diamond (2005) gives the example of two well planned dairy farms in North America, the Huls Farm in the Montana State of USA and the Gardar Farm in southwest Greenland. Both the farms were large, at the foot of snow clad mountains, located

on a riverside, growing their fodder requirement in summer in their large area, with stalls for individual cows, and located at quite some distance from consumer populations, so that the cost of products would go up due to transportation. Thus, though situated thousands of miles apart, they shared several common features. The Huls Farm is prospering, a model for other farms in that area, adopting new technologies, and attracting tourists. The equally ambitious Gardar Farm and the population around it collapsed some 500 years back. Now only remnants of the farm may be seen in the form of thick and strong stone walls and the stalls for the cattle. About the population collapse the author says, "Greenland Norse society collapsed completely, its thousands of inhabitants starved to death; were killed in civil unrest or in war against an enemy, or emigrated, until nobody remained alive". While the economically prosperous USA society could well support the Huls Farm so far, the economically deprived society of Greenland could not afford the Gardar Farm.

From the above discussion an obvious inference is that biological principles and theories do hold for man, but, when analyzing human problems and behaviour, the intricate social organization of Man has to be kept in view, as for humans cultural inheritance is as important as genetic inheritance, if not more. Hence, when analyzing and dealing human problems, it is important to take into account Socioecology, and Socioecology should be taken as an integral part of Sociobiology.

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Somatic Cell Nuclear Transfer: Some Ethical Considerations

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Abstract

This paper focuses on somatic cell nuclear transfer technology (SCNT), also known as cloning. It examines the ethical ramifications of cloning for both therapeutic and reproductive purposes. The paper argues that once the technology of cloning is refined to the point where it is no more risky than conventional reproduction; there will be no strong ethical justification for forbidding human reproductive cloning. It is further argued that the ethical problems arising from the creation and destruction of embryos in stem cell research could be circumvented if scientists were to abandon the *embryonic* stem cell research program in favor of the less controversial but therapeutically successful *adult* stem cell research program.

Introduction

The successful cloning of the first mammal, Dolly the sheep, in 1997 triggered an intense ethical debate over the possibility of cloning humans both for reproductive and therapeutic purposes, a debate that continues up to this day (Wilmut et al 1997). The technology that was used to clone Dolly is called somatic cell nuclear transfer (SCNT). After describing how the SCNT technology works, this paper evaluates a number of ethical arguments that have been advanced against both reproductive and therapeutic cloning. The paper argues that most of the arguments against reproductive cloning do not succeed in showing that creating humans using SCNT technology is immoral. It is further argued that the ethical problems arising from therapeutic cloning could be circumvented if the scientific community were to abandon embryonic stem cell research and devote more resources to adult stem cell research. The latter holds the same promise for treating a vast array of diseases but has the added advantage of not creating ethical problems.

Somatic cell nuclear transfer technology

There are basically two types of cloning: therapeutic and reproductive cloning. The two types use the same kind of technique i.e. somatic cell

nuclear transfer and they involve the creation of embryos. The ethically important difference is that whereas in reproductive cloning the cloned embryo is implanted in the uterus of a surrogate mother for a live birth, in therapeutic cloning the cloned embryo is destroyed in order to harvest stem cells.

This is how the technology could be applied. The nucleus of an unfertilized egg containing 23 chromosomes is emptied, creating an enucleated egg. A somatic cell containing 46 chromosomes from the person who is being cloned is then fused with the denucleated egg and the egg cell is then prompted to begin forming an embryo. The somatic cell can come from any part of the body. (The somatic cell that was used to create Dolly came from a donor sheep's udder). As the zygote develops into a blastocyst, it is either manipulated in order to obtain embryonic stem cells that can be used for therapeutic purposes or implanted in the uterus of a surrogate mother for a live birth. It is important to note at the outset that the cloned child and his or her progenitor will be virtually identical genetically.

Reproductive cloning

Many people react with revulsion over the possibility of producing genetically identical copies of human beings through asexual reproduction. In this section I shall consider a number of arguments that have been advanced by opponents of reproductive cloning. I plan to show that none of these arguments can bear the weight of critical scrutiny. Those who support human cloning argue that it is ethically justifiable since it would permit individuals who are infertile or who are in same-sex relationships to be able to have their own genetic children. Thus proponents of cloning argue that if a person's only chance to have her own biological child is to clone her self it would be morally indefensible to deny her that chance.

Harm to the clone

Arguments against cloning are many and varied. However there are at least three arguments that appear with relative frequency and order. Let us start with the harm to the clone argument. According to this argument, human cloning should be discouraged because the cloning procedure is neither safe nor efficacious and could result in the cloned child suffering from birth defects. As Leon Kass puts it "We should declare that human cloning is unethical in itself and dangerous in its likely consequences" (Kass 1997: 218). Critics of cloning

say that it would be immoral to create babies using SCNT, knowing the high potential for birth defects. They point out that most animals derived by nuclear transfer die during gestation while those that survive to birth frequently suffer respiratory and metabolic abnormalities or have the large offspring syndrome (Jaenisch 2004: 2787). It is also useful to note that it took 277 tries to clone Dolly.

In a recent article, Fritz Allhoff has offered an interesting challenge to the morality of human cloning. Allhoff (2004) argues that cloning has the potential of producing an individual with shortened telomeres, which would contribute to their early death. Shortening of telometric DNA at the tip of the chromosome is thought to limit the lifespan of animal cells and to elicit a signal for the onset of cellular senescence (Mu and Wei 2002: 1). Indeed, the premature aging of Dolly was attributed to the fact that her genes were copied from a six-year-old sheep. This means that her cells may have retained the molecular memory from the adult sheep from which she was cloned. Dolly had to be euthanized at an early age because she had already started suffering from arthritis and heart disease and these conditions are thought to be caused by cellular aging. Following Parfit's same number principle which holds that 'if in either of two outcomes the same number of people would ever live, it would be bad for if those who live are worse off, or have a lower quality of life than those who have lived' (Parfit 1986), Allhoff maintains that early senescence and disease susceptibility constitute a moral ground for rejecting cloning. But the principle on which Allhoff's argument is premised has been shown to be dubious. As Jesse Stenberg has shown, Parfit's principle leads to the following untenable moral dictum: '[F]or any person x, there is another person y that x is morally obligated to mate with, and it would be immoral to mate with anyone other than y' (Steinberg 2005).

The trouble with this principle is that its implementation would have very unpleasant ramifications. It would require that everyone undergo genetic screening to ensure that only the best endowed genetically mate. Such a principle would no doubt involve unpleasant intrusion into people's lives. In particular, it would interfere with their freedom of choosing procreational partners. This principle cannot therefore be relied upon to explain why the phenomenon of telomere shortening makes cloning impermissible. In saying this, I am not endorsing the view that we do not have duties to possible people. On the contrary, if

we have a choice between bringing someone into existence and not doing so, the interest of that possible person should be considered. At least we have a moral duty to ensure that lives of the people we cause to exist do not contain so much pain as to be not worth living (Glannon 1998: 205). (Incidentally an appellate court in California ruled in 1980 that a child with a genetic defect could sue her parents for not undergoing prenatal screening and aborting her (Boss 1999: 181)). Returning to Allhof's argument, I contend that the life of a clone even if diminished in certain respects as a consequence of having shortened telomeres is a life worth living and not a life that should never have occurred. The fact that a cloned individual will age faster than a person conceived in the normal way is not a morally justifiable reason for banning cloning. A short life devoid of excruciating pain and suffering can be very worth living.

There is almost universal consensus among scientists and policy makers that cloning humans should not be attempted until more facts about the process are known (a moratorium on human reproductive cloning has been declared in most western countries where cloning technology is available). However, these safety issues and scientific uncertainties are likely to be resolved in the near future and hence the argument that cloning is immoral because it is presently unsafe is likely to be short lived. History has shown that developments in science and technology keep making the impossible, possible. The idea of creating babies by in vitro fertilization (IVF) was once considered risky and morally repugnant. Today this method is common and accepted by infertile couples and is considered one of the best 'pro-life' technologies ever created. However, it is important to note that although IVF was possible in 1940s, it was not until 1978 that the first IVF baby, Louise Brown, was born. In the intervening period scientists were busy refining this technology using animals. Furthermore, every medical technology carries with it an element of risk and it would be unrealistic to insist that human cloning be attempted only when there is a 100 percent safety guarantee. Many of today's commonly employed technologies such as nuclear power and flying by airplanes were themselves once so unsafe as to be prohibited. Stronger ethical arguments need to be made if we are to consider human cloning immoral.

Undermining human dignity and individuality

The second objection to reproductive cloning is that in creating copies of people, cloning undermines human dignity and robs people of their individuality. The ground for this objection is Immanuel Kant's well known principle which states that we should treat people never as a mere means to an end, but always as 'ends-in-themselves' (Kant 1785/1994: 35-36 (428-429)).

The problem with this argument is its assumption that genes alone determine the phenotype. It must be borne in mind that the phenotype is determined only by the interaction of a particular genotype with the environment. It is also useful to note that the cloned individual will not be perfect replica of his progenitor. He will be brought up in a different environment and will have different opportunities and different choices. Studies have shown that even though they share the same genetic inheritance from their parents and very similar gestational environment, monozygotic twins may have different life expectancies, IQ, and may even be discordant for sexual orientation. Even co-joined twins who share their physiology grow as separate individuals each with his or her own character preferences. It is also useful to note that unlike monozygotic twins, the clone and its progenitor are not completely identical since the two are the product of two different eggs, which contain different mitochondria. For this reason the cloned child and his or her progenitor will be less genetically identical than monozygotic twins who not only share the same mitochondria, but also the same uterine environment.

A further difficulty with this argument has to do with the way the term 'dignity' is defined. It is not at all clear how cloning will undermine human dignity. And by the way, whose dignity will be undermined? Is it the dignity of the cloned individual or the progenitor? As Schuklenk and Ashcroft have pointed out, 'in continental European bioethics 'human dignity is not based in or derived from a coherent philosophical framework. Hence it is easy to employ it whenever it suits the needs of those lacking a decent argument for or against whatever they are concerned about' (Schuklenk and Ashcroft 2000: 34). Indeed, one is left wondering how exactly the cloned child's dignity is compromised by the very process that brings her into existence and whether this dignity is something worth protecting at all costs.

Depletion of the gene pool

The third objection is that cloning has the potential of depleting the human gene pool. Critics of reproductive cloning have argued that if cloning became widespread, human genetic diversity would decrease over time. This is an important argument because, in cloning, there is no mixing of genes. However, in sexual reproduction, new combinations of genes can be assembled on the same chromosome through recombination. Independent assortment during meiosis, which enables combination of chromosomes, generates endless genetic diversity. This variation enables a species to overcome novel environmental changes by fast adaptive change. In cloning (which is a form of asexual reproduction), however, there is a bigger chance of a mutated gene becoming prominent. It would be very difficult to get rid of such a gene.

A major problem with this argument is its assumption that cloning will become widespread. But it is unlikely that people will abandon sexual reproduction in favor of cloning. Further, I see no good reason why sequential cloning would become necessary. Given a choice, most couples would prefer a child related to both parents, not one. In any case, given the rapid development of reproductive technology, cloning is unlikely to be the only technology available to prospective parents.

It is also important to note that people are likely to resort to cloning only if they are unable to have children through normal sexual reproduction. In fact, considering that cloning is likely to be very expensive and taking account of the hassle involved, cloning is likely to remain an unattractive option for those who are gametically fertile and can reproduce normally. This has been true of most reproductive technologies.

One could also argue that far from depleting the gene pool, human cloning will help preserve the diversity of the gene pool by preventing the loss of the genes carried by infertile people and even homosexuals. In fact, this is the reasoning behind the idea of cloning genetically endangered species.

Impact on family and society

Another argument that has been advanced against cloning is its implications on the family and other social relationships. Some people have argued that because the clone would never have two genetic parents, this would undermine the traditional two-parent family. It would also encourage single parenthood. Others have worried

about the consequence to, say, the relation between the father and his daughter if the wife and the daughter are genetically identical. Would a father have a normal father-son relationship with his clone? What this in essence means is that the technology of cloning could blur the traditional family relationships.

But this is perhaps the weakest of all anti-cloning arguments. Just because the institution of the family might be quite different with the introduction of somatic cell nuclear transfer technology is no good reason to dismiss it as immoral. The truth of the matter is that our feelings of repugnance at unconventional practices, in and of itself, does not make those practices immoral. Mere discomfort does not constitute a good reason to restrict someone else's freedom to procreate. As a number of proponents of cloning have pointed out, society has in the past condemned as harmful many types of family relations such as single parent, lesbian and gay families. A number of studies have shown that the home environments provided by these kinds of families are as likely as those provided by heterosexual parents to support and enable children's psychosocial growth (see for example Cramer 1986, Belcastro et al 1993). Another study comparing IVF families with families with naturally conceived children found that parenting and children's psychosocial development did not differ significantly between the two families (Colpin and Soenen 2002).

From the foregoing, I see no compelling reason to consider reproductive cloning immoral; especially if it is the only technology that can enable gametically infertile couples to have their own biological children. This is not to say that we should start cloning tomorrow. Luckily, most countries have established a set of guidelines for testing new medical procedures, which restrict trials on human subjects pending the results of preliminary studies. These guidelines already exist and no extra legislation will be required for cloning technology.

Therapeutic cloning

The aim of therapeutic cloning is to use the cloned embryo for research or to harvest stem cells for therapeutic purposes. The reason why stem cells have attracted so much attention is because they are pluripotent, which means that they can transform into other types of cells, such as blood, liver, muscle and nerve cells. Stem cell research also holds the promise of curing many serious medical

conditions that are caused by damaged cells. This includes degenerative disorders such as cardiovascular, Alzheimer's and Parkinson's diseases, and type 1 diabetes. Advances in this technology might also make it possible to grow stem cells into entire organs for transplant although it is doubtful whether they can be grown into the level of organization required. A major advantage of using stem cells is that a recipient would not reject materials or organs developed from stem cells extracted from their cloned embryos since they share the same genes.

The right to life

The main opposition to cloning using SCNT is to reproductive cloning and not therapeutic cloning. This is interesting considering that unlike therapeutic cloning, which involves the creation and destruction of an embryo, reproductive cloning involves the creation of a child. There are two main objections to cloning embryos for stem research and therapeutic purposes, namely, the right-to-life objection and the slippery slope objection.

The right to life objection revolves around the question of whether the embryo has a moral status. Some people have argued that there is something intrinsically wrong in a technology that endangers creatures with a moral stature. Since extracting stem cells from the blastocyst (the cluster of cells that comprise the embryo) destroys it, those who consider the embryo a person regard such research as equivalent to cannibalizing embryos and commodifying their parts. The objection is that destroying an embryo in order to harvest stem cells would violate the Kantian injunction to treat human life as an end in itself, and never as a means to an end. The right to life objection regards the embryo (sometimes called pre-embryo) as inviolable, as morally equivalent to a fully developed human being. But does an embryo or a blastocyst have a moral stature? This is an old question.

Unfortunately the question of the moral status of the embryo was never resolved during the abortion debate when it first gained impetus and it is unlikely to be resolved any time soon. During this debate, some writers argued that an embryo acquires moral status from the time of fertilization, or from the time of conception and that any argument for abortion could logically be used as an argument for infanticide (Ramsey 1970, Noonan 1967). Others appealed to segmentation arguing that an embryo acquires moral status once the embryonic disc is no longer capable of dividing

into identical twins. However this approach overlooks the case of conjoined twins who rather than become two separate individuals remain joined even after birth.

Another version of the right to life argument holds that cloning for therapeutic purposes should be discouraged because although a human embryo is not a complete human being, it has the potential to develop into a human person. The problem with this argument is that it confuses potentiality with actuality. The cloned embryo may be a potential human being but it is not a human being. It has been argued that with proper scientific dexterity and given the right environment, it is possible for something to become lots of other things. In the words of Catherine Stanton and John Harris 'we all share one important piece of inexorable potential, we are all potentially dead meat, but that does not accord any of us a reason to treat us now as if we are already dead meat' (Stanton and Harris 2005: 31: 222).

The proponents of embryonic stem cell research, on the other hand, argue that the early embryo is just a collection of cells with no human characteristics. For this reason, the killing of an embryo would not be equivalent to killing a human being or a person (Savulescu 2002: 513).

Slippery slope

The slippery slope argument against therapeutic cloning holds that if we allow cloning for stem cell research, the next step will be to clone a full human being. As Savulescu quoting O'Hear puts it, '[T]oday we do a little therapeutic cloning. Tomorrow to help infertile couples a bit of reproductive cloning will be allowed. The day after, the human world is full of clones, for all kinds of reasons, good and bad' (Savulescu 2002: 525). The force of this argument is contingent upon reproductive cloning being immoral. But as I have already shown in the previous section, I see no good reason why reproductive cloning should be considered immoral in the first place. Cloning is no more ethical than giving birth to monozygotic twins, which involves two separate and distinctive organisms with identical genomes. In fact, therapeutic cloning raises more serious problems than reproductive cloning since the former involves the deliberate destruction of embryos while the latter does not. Moreover, there is no reason to believe that therapeutic cloning will automatically lead to therapeutic cloning. This is an example of the so-called slippery fallacy. However, the slope

may not be as slippery as the opponents of cloning would have us believe. The same argument was advanced to oppose in vitro fertilization with critics predicting that it would lead to eugenic practices. Today in vitro fertilization is considered as an acceptable medical procedure. However, even if we grant that cloning for reproductive purposes is immoral, we have no good reasons to suppose that therapeutic cloning will necessarily lead to therapeutic cloning. As Hansen has rightly pointed out, a completely different decision will be required to implant the transnuclear egg in the womb of a surrogate mother before it reaches the blastocyst stage when stem cells can be harvested (Hansen 2002:88). Furthermore, there is no reason to believe that we cannot dig our heels in at a certain point and put a firm barrier across the slippery slope. Such a barrier can take the form of a properly drafted legislation.

As I have already pointed out, the ethical status of the embryo was never resolved during the abortion debate and is unlikely to be resolved any time soon. However, we must not lose sight of the fact that embryos created using somatic cell nuclear transfer are not the only source of stem cells that can be used for therapeutic purposes. In fact, there are three research programs involving stem cells, namely, embryonic stem cell research involving excess embryos from IVF clinics, embryonic stem cell research involving embryos produced using somatic cell nuclear transfer technology and adult stem cell research. The first and second programs raise ethical problems because they involve the deliberate killing of an embryo in order to harvest stem cells. But the second seems more morally palatable for some people since it involves embryos that have already been discarded. Those who support this position appeal to the so called 'nothing is lost principle'. According to this principle, since for all practical purposes the leftover embryos are deemed to be unsuitable for reproduction and are going to be destroyed anyway, it is better to use them for research therapies (Pennings and Steirteghem 2004: 1061-1062).

But some people remain uncomfortable with the destruction of human embryos, even those that will never be implanted in a uterus. They point out that making use of such embryos even if for therapeutic purposes is tantamount to benefiting from evil. In other words, one cannot benefit from human embryonic stem cells without incurring moral blame. And as Brock has pointed out 'the surplus embryos from IVF will not inevitably die or

be destroyed; they will only be destroyed if someone makes the decision to destroy them, otherwise they will remain frozen indefinitely, retaining the biological potential to develop into human beings if implanted' (Brock 2006: 37). Thus for those who believe that a human embryo has a moral status, destroying surplus IVF embryos in order to harvest stem cells for research or therapy is as immoral as creating embryos using SCNT for the sole purpose of killing them in order to harvest stem cells. This is because the moral status of an embryo is not determined by the way in which it was created. But setting the ethical arguments aside, there is a very strong practical consideration in favor of using SCNT embryos over surplus IVF embryos, namely, that a patient would not reject material developed from stem-cells derived from his or her own cloned embryo.

However, the adult stem cell research program does not create any ethical difficulties since it does not involve the creation of embryos in the first place. Moreover, it holds the promise of treating the same array of diseases (perhaps more) that embryonic stem cell research promises. Adult stem cells are found in all tissues of the growing human being and, according to recent findings, also have the potential to transform themselves to practically all cell types and are immunologically compatible. It is useful to note that whereas human adult stem cells have already shown the potential to develop into other tissues and to treat diseases, no successful trials using embryonic stem cells have been carried out in humans to-date. Unfortunately, the mainstream media has tended to overstate the potential of embryonic stem cells and to downplay or totally ignore medical breakthroughs made by adult stem cell research thus giving the impression that there is no alternative to embryonic stem cell research. And as James Sherley has pointed out in a letter to *Nature*, the hype over embryonic stem cells in the popular media has contributed to the decline of public enthusiasm for any type of stem cell research (Sherley 2003: 381).

A cursory look at recent articles appearing in the leading science journals such as *Science*, *Nature*, *Lancet*, *Stem Cells*, *Blood*, *Arthritis and Rheumatism* and *Cell* reveal major breakthroughs in adult stem cell research. In fact, adult stem cell therapies are already available for cancer and a host of autoimmune diseases such as lupus, multiple sclerosis, Crohn's disease and rheumatoid arthritis (Burt et al 1999, Verburg et al 2001, Wulffraat et al 2001). A study by Alison and her co-workers

(2000) has shown that adult liver cells can be derived from stem cells originating in the bone marrow or circulating around the liver, which raises the prospect of regenerating diseased livers. Further recent research indicates that the search for adult renal stem cells is narrowing (Brodie and Humes 2005). Another study suggests that adult cells have more plasticity than initially thought (Grove et al 2004). In light of the foregoing, it would be both imprudent and morally wrong for the scientific community to continue pursuing an ethically controversial research program when an ethically unproblematic but therapeutically progressive alternative program already exists. Indeed, this would be inconsistent with the so called principle of subsidiarity, which states that we should always opt for the less contentious means of achieving the intended goal. Put another way this principle states that 'if the same results can be obtained by two types of research, one should perform the research that is least offensive' (Pennings and Steirteghem (2004: 1063). Adult stem cell research program has proved to be the least offensive of the existing stem cell research programs.

Conclusion

In this paper I have discussed a number of ethical issues arising from the possibility of cloning humans. My conclusion is that once the technology of cloning is refined, there will be no good moral reason to prevent gametically infertile couples from having their own genetically related children using SCNT. But as I have pointed out, scientific uncertainties and technical problems remain regarding SCNT. Until these hurdles are cleared, it would be irresponsible to attempt to clone humans. In the mean time, sexual production remains morally superior to asexual reproduction using SCNT. With regard to therapeutic cloning using embryonic stem cells, I have argued that the ethical problems arising from this line of research can be avoided if scientists were to concentrate on the promising adult stem cell research program. I see no good reason why scientists should continue to devote so much time, energy and resources in human embryonic stem cell research when dramatic medical breakthroughs are being made in the area of human adult stem cell research. Indeed, these advances in adult stem cell research clearly indicate that medical researchers can now realize medical gain without ethical pain.

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Bioethics and Dentistry: Teaching and Research in Brazilian Faculties of Dentistry

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Abstract

In Dentistry, the presence of Bioethics courses, in both graduation and post-graduation programs is essential. The future dentists have to be habituated to discuss and reflect about ethical dilemmas that occur routinely in dental offices. Future professors and/or researchers also have to learn, debate and reflect about ethical issues associated to teaching and research. In Brazil, the Resolution n. 196/96, of the National Health Council states: "Any research involving human subjects must be submitted to the appreciation of a Committee for Research Ethics".

In this context, this survey was designed to verify the presence of Bioethics courses and Committees for Research Ethics in Brazilian Faculties of Dentistry. Questionnaires were sent to 152 Faculties, and 30 replied (20%). Among other results, it was verified that 30% of the participants have a Bioethics course in their graduation program, 50% in the Master program, and 30% in the Doctorate program. 93% of the respondents have a Committee for Research Ethics in their Institution. Although the presence of Bioethics teaching in part of the participant Institutions, it must increase and be stimulated. The existence of Committees for Research Ethics in almost all the Institutions reflects a change of paradigms that fortifies ethical parameters in the scientific area.

Key-words: Bioethics; Dentistry; Dental Ethics; Research Ethics Committees; Dental Education.

Introduction

The 20th century was marked by deep transformations. There were changes in several fields. The advent of the computer science, for example, transformed the most daily reality of people. The advancements in science were countless. Particularly the last thirty years brought innovations even imagined by many investigators of previous decades. With so great changes, ethical dilemmas appeared; these changes point to the need of ethical debates (Serra, 2006).

Since the end of the Second World War, texts have been elaborated to establish rules concerning scientific experiments involving human beings. In the Nuremberg Military Tribunal, those that were involved from September 1939 to April 1945, in planning and conducting experiments involving human beings without their permission, were judged by crimes of war and against the humanity.

In 1947, with the Court of Nuremberg, appeared the Code of Nuremberg, which established norms for research in human beings. This Code stated, among other rules, the voluntary assent, the analysis of risks and benefits of the research, the freedom of the subject of the experiment to retire his consent during the research, and the scientific qualification of the researcher.

Research involving human beings is governed by various international documents, as Nuremberg Code, Helsinki Declaration, the CIOMS International Ethical Guidelines for Biomedical Research Involving Human Subjects, and the recent Universal Declaration on Bioethics and Human Rights (Jonsen, Siegler & Winslade, 2002; Hope,

Savulescu & Hendrick, 2003; Kirigia, Wambebe & Baba-Moussa, 2005; Universal Declaration on Bioethics and Human Rights, 2005).

In October 2005, UNESCO's 33rd general conference adopted the Universal Declaration on Bioethics and Human Rights (UDBHR), which aims to set universal standards in bioethics, with "due regard for human dignity, human rights and freedoms" (Serra, 2006). The UDBHR is also concerned with the researches involving human beings issue. According to article 19, "Independent, multidisciplinary and pluralist ethics committees should be established, promoted and supported at the appropriate level in order to (Universal Declaration on Bioethics and Human Rights, 2005):

(a) assess the relevant ethical, legal, scientific and social issues related to research projects involving human beings;"

In the current era of globalized research, good ethics stewardship demands that every country, whatever its level of economic development, should have a functional research ethics review system for protecting the dignity, integrity and health safety of all its citizens participating in research (Kirigia, Wambebe & Baba-Moussa, 2005). In both developing and developed countries, research involving human subjects is an essential component of improving healthcare (Bagheri & Macer, 2005).

In Brazil, the Resolution n. 196, of 10 of October of 1996, of the National Health Council (CNS) is in force. It determines norms on the issue, and is "based on the main international documents that gave rise to declarations and guidelines on research involving human subjects" (National Health Council, 2000).

The mentioned Resolution, in its item VII, states: "Any research involving human subjects must be submitted to the appreciation of a Committee for Research Ethics (CEP)". The item VII.1 affirms:

VII.1 – The institutions in which research involving human subjects are carried out must set up a Committee for Research Ethics (CEP), as needed."

The duties of the Committee for Research Ethics (CEP) are presented at item VII.13 that states, among others:

a. to review all protocols for research involving human subjects, including multicentre research; the CEP will be responsible for all decisions pertaining the ethics of the research to be developed by the institution, so as ensure the integrity and rights of volunteers participating in said research;

e. to act as a consultant and educational source, fostering reflection about ethics in science.

Dentistry has in research involving human subjects a pillar for its development. So, the constitution of Committees for Research Ethics (CEPs) in the Institutions that develop experiments in human beings is mandatory, besides being ethically necessary. These Committees can provide multidisciplinary peer review of research proposals (Schwartz, Preece & Hendry, 2002).

The reflection and the ethical discussion of research involving human beings, that traditionally were not part of the discussions and/or evaluations of research projects, are essential.

Bioethics is also present in the daily routine of the professionals of the health area. Their clinical activities present ethical dilemmas that were unimaginable some decades ago. The patient has the right to choose the treatment that he judges more convenient for him? Or to choose not submitting to any treatment? The doctor, or the dentist, must accept the patient's choice, in case they do not agree with it, understanding that it is not better treatment for him?

The bioethical discussion is essential in the health area, besides it is also important in other areas, given it being trans- and multidisciplinary. In Dentistry, however, it is incipient.

The clinical relation, also called professional/patient relationship, in the area of the health, is a subject discussed by Bioethics (British Medical Association Ethics Department, 2004; Schwartz, Preece & Hendry, 2002). And it has great importance in the dental field, as well as the professional responsibility issue.

The bioethical principles – autonomy, beneficence, non-maleficence and justice (Beauchamp & Childress, 1994) - need to be analyzed with an approach directed to the relation dentist/patient. The need of obtaining the informed consent for the accomplishment of dental works is unquestioned. For this, the professionals need to present the alternatives of treatment, and the characteristics of each one. Thus, it is not conceived a professional who imposes to the patient the work that he thinks to be better.

Bioethical dilemmas often occur in dental offices, where the legal authority many times is opposed to ethics (Ozar & Sokol, 1994). Is it ethical to extract a permanent tooth of a minor, which has conditions and indication of treatment, attending to the request of his/her responsible, because he has not financial resources for the treatment? If the

responsible is adequately clarified, the professional will be legally supported. However, what can we say about the ethical question, if the minor refuses the surgery?

The dental attendance of HIV+ patients has been questioned for some professionals. Concerning this issue, it is necessary a bioethical approach.

The distribution of resources in Dentistry, the attendance to the bioethics principle of Justice, is an important subject, especially in Brazil, a country that presents great social inequalities.

It is necessary, with urgency, the promotion of the bioethics discussion and reflection in Dentistry.

Incorporating systematically the formation in Bioethics to the curriculum, from graduation until continued education, it will be possible to enter in the path of the professional excellence, avoiding the increasing trend to reduce the professional qualification to the technician-scientific capacity, and the relation with the patients to a bureaucratic or administrative proceeding. So, its discussion in classrooms, during the formation of the future professionals of the health area is essential. In the same way, it is important to be present in post-graduate programs.

The Brazilian Curricular Directives for Dentistry determine that Bioethics must consist in basic fundament, in the graduation course.

The post graduation *strictu sense* is where future masters and doctors, professors and researchers are formed. Thus, the introduction of a Bioethics course in these programs is very important.

The bioethical discussion is not only recommendable, but in fact it is essential in the dental area. However, this subject is relatively new in Brazilian Dentistry. We understand that a survey on teaching of Bioethics in both graduation and post graduation levels in Brazilian Faculties of Dentistry will be able to propitiate a vision on the reality of this issue, making possible, from now on, the improvement of the bioethical discussion in Dentistry. This work carried out a survey, in Brazilian Faculties of Dentistry, objectifying to verify the presence of Bioethics courses, in graduation and post graduation programs, and also the existence and attributions of Research Ethics Committees.

Methodology

The following questionnaire was sent, by e-mail, to 152 Brazilian Faculties of Dentistry.

1 – Name of the Institution:

Faculty:

University:

2 – Is the course of Bioethics present in the curricular structure of the Faculty of Dentistry of your Institution?

a) graduation program no
 yes, since the year _____

b) *stricto sensu* post-graduation program:
b.1) this Institution does not have a *stricto sensu* post-graduation program

b.2) Master program no
 yes, since the year _____

b.3) Doctorate program no
 yes, since the year _____

3 – Is there any other course related to Bioethics as, for example, Ethics in Research, in the curricular structure of the Faculty of Dentistry of your Institution (the courses of Deontology and Forensic Dentistry are not considered in this question)?

a) graduation program no
 yes

b) *stricto sensu* post-graduation program:
b.1) this Institution does not have a *stricto sensu* post-graduation program

b.2) Master program no
 yes

b.3) Doctorate program no
 yes

4 – Is there a Committee for Research Ethics in your Institution?

no
 yes, since the year _____

If your answer to the question nº 4 is positive, please, fill the questions 5 e 6, if not, go to the question nº 7.

5 – The Committee for Research Ethics appreciates projects from:

exclusively the Faculty of Dentistry
 all the University
 some Faculties and/or Departments and/or Institutes of the University

6 – The Committee for Research Ethics of your Institution:

appreciates exclusively projects of research involving human beings

appreciates projects of research involving human beings and animals

7 – Is there a Committee of Ethics in Animal Research in your Institution, to appreciate exclusively projects of research involving animals?

no
 yes, since the year _____

8 – If yes, the Committee of Ethics in Animal Research appreciates projects from:

exclusively the Faculty of Dentistry
 all the University
 some Faculties and/or Departments and/or Institutes of the University

Thank you for your collaboration.

The results obtained were included in a databank built in Access. The same program was used to verify the frequency of the responses. The descriptive statistical analysis was used for the analysis of the data.

Results and Discussion

Thirty Institutions (20% of the total of 152 mailed questionnaires) answered the questionnaire. The data obtained are presented in Tables 1 to 16. Tables 1 and 2 show the existence of the Bioethics course in graduation program and the date of its inclusion in the curriculum.

Table 1 – Existence of the Bioethics course in the graduation program.

	Percent	Frequency
No	70	21
Yes	30	9

Table 2 – Date of inclusion of the Bioethics course in the graduation program.

	Percent	Frequency
Before 2000	22	2
From 2000	78	7

Obs: The percentages refer to the total of Faculties that have the course.

Observing tables 1 and 2, we can verify that only one third of the responding institutions (30%) have the course of bioethics in the curriculum of their graduation program. The creation of that course occurred mainly (78%) after the year of 2000. This reflects the recent entrance of the bioethical discussion in Brazil and, specifically, in Brazilian Dentistry. The need to intensify the presence of Bioethics in Dentistry, forming, since the scholar chairs, professionals engaged with the bioethical debate is fundamental.

Tables 3, 4, 5 and 6 show the presence of the course of Bioethics in the post-graduation programs, and when it was implemented.

It can be verified in Table 3 that 50% of the Institutions have the course of Bioethics in their Master programs. This percentage is bigger than the one found concerning to the graduation program. This fact may reflect a preoccupation, in the post-graduation level, with the bioethical discussion, perhaps with emphasis in research. On table 4 it is verified that also in the Master program, the beginning of the implementation of the course of Bioethics occurred mainly (in 60% of the cases), from 2000 on. The Resolution CNS 196/96⁸, that

determines the obligation of the submission of research protocols to a Committee for Research Ethics (CEPs), was put into force on October of 1996. Thus, the presence of the Bioethics course in post-graduate programs can also be associated to this fact.

The Bioethics course is present in only 30% of the Doctorate programs (table 5). According to the data shown in table 6, 67% of these courses begun after 2000. At Doctorate level, the presence of the Bioethics course is very incipient. However, the fact that many respondent Institutions do not have Doctorate courses has to be considered.

Table 3 – Existence of the course of Bioethics in post-graduation – Master program.

	Percent	Frequency
	30	9
No	17	5
Yes	50	15
No answer	3	1

Table 4 – Date of inclusion of the course of Bioethics in post-graduation – Master program.

	Percent	Frequency
Before 2000	33	5
From 2000	60	9
No answer	7	1

Obs: The percentages refer to the total of Faculties that have the course.

Table 5 – Existence of the course of Bioethics in the post-graduation – Doctorate program.

	Percent	Frequency
	30	9
No	27	8
Yes	30	9
No answer	13	4

Table 6 – Date of inclusion of the course of Bioethics in post-graduation – Doctorate program.

	Percent	Frequency
Before 2000	22	2
From 2000	67	6
No answer	11	1

Obs: The percentages refer to the total of Faculties that have the course.

Table 7 – Existence of a course related to Bioethics in the graduation program.

	Percent	Frequency
No	67	20
Yes	33	10

Table 8 – Existence of a course related to Bioethics in the Master program.

	Percent	Frequency
	30	9
No	27	8
Yes	27	8
No answer	17	5

Table 9 – Existence of a course related to Bioethics in the Doctorate program.

	Percent	Frequency
	30	9
No	33	10
Yes	17	5
No answer	20	6

Tables 7, 8 and 9 show the presence of other courses, excluding Forensic Dentistry and Deontology, in the graduation and post-graduation programs, related to Bioethics. 33% and 27% of the Institutions affirmed that have, respectively in the graduation and Master programs, courses related to Bioethics; while this occurred in 17% of the Doctorate programs. So, although many times there is not the specific course of Bioethics, at least the discussion of some issues raised by Bioethics occur in the program of another courses.

Tables 10 and 11 present the obtained data concerning the existence of a Committee for Research Ethics and the date of its creation.

Table 10 – Existence of a Committee for Research Ethics (CEP).

	Percent	Frequency
No	6.67	2
Yes	93.33	28

Table 11 – Date of creation of the Committee for Research Ethics (CEP).

	Percent	Frequency
Before 2000	61	17
From 2000	32	9
No answer	7	2

Obs: The percentages refer to the total of Faculties that have the Committee.

It can be verified from Table 10 that almost all Faculties of Dentistry (93%) who responded have a Committee for Research Ethics. This is very positive. According to table 11, 61% of the Committees were created before 2000, a short time

after the Resolution 196/96 entered into force. There is no Committee created before 1996, all responses mention the creation from 1996 on.

Table 12 and 13 present, respectively, the responses concerning the origin of the projects and the appreciation of the CEPs.

Table 12 – Origin of the projects appreciated by the Committee for Research Ethics.

Origin of the projects	Percent	Frequency
Exclusively the Faculty of Dentistry	18	5
All the University	61	17
Some Faculties and/or Departments and/or Institutes of the University	21	6

Obs: The percentages refer to the total of Faculties that have the Committee.

Table 13 – Appreciation of the Committee for Research Ethics.

Appreciation of the Committee for Research Ethics.	Percent	Frequency
Exclusively projects of research involving human beings	46	13
Projects of research involving human beings and animals	54	15

Obs: The percentages refer to the total of Faculties that have the Committee.

It can be observed in Table 12 that the majority of Committees for Research Ethics appreciate research projects from the whole University (61%); in less than one fifth of the cases (18%) the Committees attend exclusively the Faculties of Dentistry. This can reflect a little demand, that cannot justify a CEP exclusive to the Faculties, as well as an understanding that a major multi and transdisciplinary approach is desired. It is evident that in institutions where the research involving human beings is very high, many times it is necessary to have an exclusive Committee, because a CEP involving all the University would become overloaded.

Nowadays, in Brazil there is a period of transition concerning this reality. We believe that many CEPs were created to follow the rules of Resolution CNS 196/96, in a first moment but, with the experience of their activities, and according to their realities, can have their structures modified, joining others or, in contrary, separating of the original CEP to form another more specific Committee.

Although Brazil does not have norms concerning animal research, as the existing rules for human beings present in the Resolution 196/96, there is a gap concerning the (bio)ethical aspects of them. There are specific norms, as those that protect animals, a Code of Ethics in Animal Research, but without the legal force of the mentioned Resolution. However, researchers are concerned in having their animal researches ethically appreciated; some publications do not accept for publication works that were not submitted to a Ethics Committee. Thus, some CEPs also assumed the task of reviewing projects that involve animals; some Institutions created specific Committees, separate from those that appreciate researches involving human beings.

It is possible to verify on table 13 that more than half of the respondents (54%) have CEPs that accumulate the tasks of appreciating both projects – involving human beings and animals, while the CEPs that attend almost half of the participating Institutions (46%) appreciate exclusively projects involving human beings.

Tables 14, 15 and 16 show, respectively, the existence of a Committee of Ethics in Animal Research, their creation dates and the origin of the projects appreciated by them.

Table 14 – Existence of a Committee of Ethics in Animal Research.

	Percent	Frequency
No	70	21
Yes	30	9

Table 15 – Date of creation of the Committee of Ethics in Animal Research.

	Percent	Frequency
Before 2000	22	2
From 2000	78	7

Obs: The percentages refer to the total of Faculties that have the Committee.

Table 16 – Origin of the projects appreciated by the Committee of Ethics in Animal Research.

	Percent	Frequency
Exclusively the Faculty of Dentistry	11	1
All the University	67	6
Some Faculties and/or Departments and/or Institutes of the University	22	2

Obs: The percentages refer to the total of Faculties that have the Committee.

According to the data presented on table 14, almost one third of the participating Institutions (30%) have a Committee of Ethics in Animal Research. 78% of them were created after 2000, the opposite trend to what was observed with the Committees for Research Ethics.

If we consider that 93% of the Institutions have a CEP, and 54% of these appreciate animal projects, and 30% of the Institutions have Committees of Ethics in Animal Research, it can be verified that, although in Brazil there isn't any binding normative, there is a considerable preoccupation with the ethical appreciation of the researches with animals.

In 67% of the Faculties that affirmed that have a Committee of Ethics in Animal Research, this Committee attends all the University; in 11% of the cases there is the exclusive attendance of the Faculty of Dentistry or of only some Faculties and/or Departments and/or Institutes of the University.

Final Considerations

The data obtained in this work reveal that, although it is present in part of the Institutions, the teaching of Bioethics in Dentistry must increase and be stimulated, in both graduation and post-graduation levels.

The presence of Committees for Research Ethics, and the appreciation of projects of research with animals by them, or by specific Committees for Animal Experimentation, reflect an ethical discussion that is being conducted, a change of paradigms that fortify ethical parameters in the scientific area.

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Difference in ethical views among first-year to sixth-year students in a medical school

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Abstract

Ethical views of the first-year to sixth-year medical students were studied during bioethics education via questionnaire in 2004. Questions included “would you treat a mentally ill man condemned to death to fit him for execution?”, “is a criminal law suit against a surgeon responsible for a patient's death reasonable?” and “should a surgeon responsible for a patient's death be prosecuted for manslaughter.” The number of students answered

“yes, to treat a mentally ill man” tended to increase as they moved up to the senior classes, although there was no statistical significance. A criminal law suit against the surgeon and the charge of manslaughter was responded with a wide variety among the classes, that is the second-year and fifth-year students showed less favorable attitudes to the law suit against the surgeon than the first-year, third-year and fourth-year students. There was no distinct relationship with age, gender or the past bioethics education. Thus, the attitudes of medical students agree on one, and differ on other ethical issues depending on their classes. Although the reason for the difference in ethical views among classes was not clear, these results suggested that ethics education was a sensitive subject for medical students hence the manner of ethics education by teachers was of critical importance.

Key words: clinical ethics, medical students, ethics education

Introduction

Development in medical technology and the complexity of advanced medicine have made clinical decisions often hard to make in the face of the pros and cons of controversial ethical issues, such as those related to life and death. Both health care providers and receivers are now involved in decision-making in these difficult situations, and they often hold conflicting views. In these circumstances, it is necessary for doctors to have essential knowledge and being trained for appropriate ethical approaches. Thus, importance of bioethics or clinical ethics education is getting greater in medical school. Ethics education is still waiting to be evolved (1), since information is needed for establishing satisfactory educational strategy for medical ethics. It has been shown that the needs of students for ethics education differed depending on their classes (2), and a class-specific strategy for ethics education has been proposed (3). In this sense, if there is information as to how attitudes of students toward ethical issues change as they move up to the senior classes, that information may be useful to assess the needs of ethical education among students. So far, to our knowledge, one study dealt with the change of attitudes of medical students toward truth telling in cancer, which showed that their attitudes changed from disclosing to concealing the truth to the patient as they moved up to the senior classes (4). Thus, a basic concept on informed consent and skills for communication with the patient may be

necessary for the upper class students. To give more basic information regarding the attitudes of students toward ethical issues, we asked the same ethical questions to all the medical students in 2004 from first-year to sixth-year. This study was possible because the reform of curriculum in our university gave us the chance to do such a comparison.

Methods

The bioethics course was an elective subject until 2003, since then it became a compulsory component of the first-year medical students at the Yamaguchi University. In the professional course, second-year to fourth-year students learned the compulsory medical ethics, and fifth-year and sixth-year students learned the compulsory composite medicine (Table 1). The bioethics and medical ethics course each composed of 15 teaching-hours, and the composite medicine course composed of 30 teaching-hours. Thus, our students have three occasions for learning bioethics or clinical ethics during six years in the university. Because of the reform of curriculum in our university, we had the chance to ask the same ethical questions to each class of students during those courses in 2004.

The compulsory bioethics course covered a number of bioethics topics, such as brain death/organ transplant, assisted reproductive technology, euthanasia, terminal care, malpractice, gene technology, truth disclosure, communication and informed consent. The lecturer (N.T.) discussed the pros and cons of the topics without attempting to impose "right answers." In the compulsory medical ethics course, the number of topics selected was lessened, and emphasis was laid on deeper discussion among students and lecturers. The composite medicine course composed of the medical ethics course and omnibus lectures by guest lecturers from the outside university. At the end of lectures, the students were asked to give answers to questions on the topics covered, with a yes or no response and comment.

Table 2 summarizes the questions. Question 1 was taken from an actual case in the United States (5) in which a prisoner on death row became mentally ill. Because a mentally ill man cannot be executed, the authorities asked a doctor to treat the patient, and the doctor refused. Students were asked to answer the question, "would you treat this patient?" The decision of the U.S. Federal Supreme Court to proceed with the execution was

subsequently disclosed to the students and discussed the following week. Question 2 and 3 referred to a claim by the family of a patient who died as a result of a complication of surgery. During emergency cholecystectomy, a common bile duct was injured, and despite repair and intensive treatment, the patient died. The family of the patient sued the surgeon with the charge of manslaughter. The mortality rate for elective cholecystectomy is a maximum of 1%, while the mortality rate for common bile duct damage during surgery is about 20 %. These figures had been explained to the patient and family under informed consent. There was no obvious negligence, as the surgeon had taken all necessary measures during surgery. The Good Samaritan Law was explained to students before presenting this case study (6). Although other ethical questions were raised to students as shown before (7), results of these 3 questions were presented here because not all classes were asked other questions for the practical reason in our curriculum.

The statistical analyses employed SPSS 11.5 J. Continuous variables were tested by ANOVA, and categorical variables by Pearson's chi square test. Those data sets which showed $p < 0.11$ in the chi square test were included in a logistic regression analysis (method, ENTER), with the answer "yes" the dependent variable, and age and gender as explanatory variables. Number of subjects less than the total student numbers was the result of student absence. All p values were two-tailed. Statistical significance was suggested at $p < 0.05$.

Results

Table 3 summarizes background profiles of the students in each class together with the number of students who took the elective bioethics course at their first-year at university. Students joined to each class from the admission entering examination were excluded from the comparison, because they were much older than other students in each class.

The percentages of female students ranged from 26% to 45% (chi square=10.78, $df=11$, $p=0.056$). The numbers of students who had learnt the elective bioethics course at the first-year varied from 34% to 100% (chi square=209.96, $df=9$, $p=0.000$). High percentages of the fourth-year to sixth-year students were presumably derived from the fact that a full-time bioethics teacher from the medical faculty was available during those years, whereas the low numbers of second-year and third-

year students who took the course were due to the absence of a fulltime teacher from the medical faculty.

Table 4 summarizes the responses to the questions. The number of students answered "yes, to treat a condemned mentally ill man" was the highest in the first-year students, and the lowest in the second-year students thereafter tended to increase from the second-year to the sixth-year students, although there was no statistical significance (chi square=12.00, df=11, p=0.285). There was no relationship with age, gender, past bioethics education. Almost all students considered this a difficult decision for doctors. Some comments by students who answered "yes" were that "treatment is an obligation of the doctor," "it is assumed that the mentally ill person wants to be treated," "what happens after treatment is not an issue" and "the law and the request of the authorities should be respected." The reason for answering "no" was almost exclusively, "I cannot assist in killing a man, even if there is a professional obligation to treat."

The number of students who thought that a criminal law suit against the surgeon in this case was reasonable showed a wide variety among the classes (Table 4). The second-year and fifth-year students showed the same attitudes with the similar numbers of pros and cons, whereas the first-year, third-year and fourth-year students were mostly favorable to the law suits against the surgeon (chi square=51.770, df=9, p=0.000). Male students tended to have agreed less frequently than female students of the first-year class, although the difference was not statistically significant. Such a trend in the gender difference became less evident as they moved up to the upper classes. There was no relationship with age or the past bioethics education. Comments indicated that sympathy for the patient's family was a major reason for approving of a criminal law suit against the responsible surgeon.

Regarding the charge of manslaughter, the numbers were almost equally divided in the first-year students. Significantly fewer students in the second-year and fifth-year class thought that the surgeon should be prosecuted for manslaughter than did those in the third-year and fourth-year students (chi square=85.137, df=9, p=0.000). The influence of gender was inconsistent. For example, male students tended to have agreed with the prosecution less frequently than female students of the third-year class (chi square=4.960, df=3,

p=0.084), whereas female students agreed with the prosecution less frequently than male students of the fifth-year class (chi square=6.871, df=3, p=0.032). There was no relationship with their age and the past status of bioethics education. Comments for approving of criminal law suits against the responsible surgeon included, "the consequence is of most importance," "no excuse for loss of patient's life resulting from surgeon's action" and "the responsible surgeon should be punished as in traffic accidents." Students who disapproved commented that "it is too harsh to punish the surgeon who did his best," "informed consent was obtained from the patient and family, and the family should have understood and accepted the risk of such a complication prior to surgery" and "medicine is by no means 100% successful, the surgeon's effort should be appraised."

The large majority of students appeared to have accepted the American rule of informed consent as in the first-year students (7), although a minority of students supported the traditional paternalism (data not shown, because a half of classes were asked this question). Many students commented on the importance of studying ethics in medical. In the discussion the following week, students were surprised at the large differences in their opinions.

Table 1. The 2004 courses relating to medical ethics and the learnt courses in the past

Students	2004 course	Past course
First-year	bioethics (C)	-
Second-year	medical ethics (C)	bioethics (E)
Third-year	medical ethics (C)	bioethics (E)
Fourth-year	medical ethics (C)	bioethics (E)
Fifth-year	composite medicine (C)	bioethics (E), medical ethics (C)
Sixth-year	composite medicine (C)	bioethics (E), medical ethics (C)

C; compulsory course, E; elective course

Table 2. Questions administered to students

- 1: Would you treat a mentally ill man condemned to death to fit him for execution?
- 2: Is a criminal law suit against a surgeon responsible for a patient's death reasonable?
- 3: Should a surgeon responsible for a patient's death be prosecuted for manslaughter?

See the text for additional information on each question.

Table 3. Background profiles of the students

Students	Class size	Age (SD)	Male/female	
Numbers who took elective course				
First-year	85	20.5 (1.8)	63/22	-
Second-year	92	21.2 (1.8)	65/27	47 (51%)
Third-year	91	22.5 (2.6)	60/31	31 (34%)
Fourth-year	76	23.0 (2.5)	44/32	76 (100%)
Fifth-year	87	24.6 (2.7)	48/39	79 (91%)
Sixth-year	88	26.2 (4.9)	52/36	84 (95%)

Table 4. Responses of students to questions

Number and (percentages)

1st-year 2nd-year 3rd-year 4th-year 5th-year 6th-year

1. Treat a mentally ill man to fit him for execution **p=0.285**

Yes	65 (76)	53 (60)	53 (61)	44 (63)	52 (68)	58(66)
No	20 (24)	33 (38)	31 (36)	25 (36)	21 (27)	26(30)
Not decided	0	2 (2)	3 (3)	1 (1)	4 (5)	4 (5)

For a practical reason, the sixth-year students were asked only the first question.

2. Criminal law suit against the responsible surgeon is reasonable **p=0.000**

	<i>1st-year</i>	<i>2nd-year</i>	<i>3rd-year</i>	<i>4th-year</i>	<i>5th-year</i>
Yes	67 (80)	42 (46)	67 (75)	66 (88)	40 (53)
No	15 (18)	47 (51)	19 (21)	9 (12)	33 (44)
Not decided	2 (2)	3 (3)	3 (3)	0	2 (3)

3. The responsible surgeon should be prosecuted for manslaughter **p=0.000**

	<i>1st-year</i>	<i>2nd-year</i>	<i>3rd-year</i>	<i>4th-year</i>	<i>5th-year</i>
Yes	41 (49)	16 (18)	56 (63)	40 (53)	19 (25)
No	43 (51)	73 (80)	27 (30)	24 (32)	53 (71)
Not decided	0	2 (2)	6 (7)	11 (15)	3 (4)

Discussion

As we had a unique opportunity to teach medical ethics to all six classes of medical students by the same teachers in one particular fiscal year, we used this chance to study possible difference in attitudes toward ethical issues among classes. It might give some useful insight into ethics education of medical students, because such a kind of information has not been available before. The results indicate similarity of ethical views in one area and differences in others. For example, the majority of students favored treating a condemned man for mental illness to expedite his execution, although almost all students commented on the difficulties of the decision for doctors. Many

students acknowledged the importance of esteem for the traditions and culture of law in society.

Although their opinions were divided in some classes, students were critical of the surgeon responsible for a patient's loss of life. Japan has a long history of punishment for medical misconduct, dating back to the first written law (Taiho-Ritsuryo) in the eighth century (8). Uncertainly in medicine which results in inevitable incidence or the efforts with good intentions of health care providers on behalf of patients are not taken into consideration in malpractice suits in Japan. In Western culture, health professionals are protected by the Good Samaritan Law from liability for malpractice in emergency situations, so far as there is no gross negligence in practice (6). Although the Good Samaritan Law and its implications in medicine had been explained just before this question was asked, few students mentioned it specifically in their comments. The long tradition of punishing the doctor for any errors may be the reason for this orientation. Even in the United States, where the Good Samaritan Law has been enacted, medical errors are not openly discussed, so that errors are under-reported (9). In Japan, reporting one's own errors establishes liability for criminal charges, so that doctors and nurses hesitate to report them. In such circumstances, measures aimed at patient safety based on reported errors will be erroneous. Thus, a reasonable system, which will encourage the reliable reporting of errors, is still needed

The important question is as to what the reason for the difference in their ethical attitudes among different classes of medical students is in this study. Past education or teachers must have influenced their attitudes. Although the present result did not show the relationship between their attitudes and past bioethics education, some unknown factor might be hidden behind possibly relating to the manner of ethics education. Such an example of ethics education is one by a teacher who is a strong anti-brain death claimer in Japan (10). He first asked if students were willing to donate organs. Then, he showed to students the video of "the brain dead person moving immediately after oxygen being cut off". Finally, he asked students "can you remove organs from such a living patient?" A consequence was that most students who had previously approved organ removal changed their attitudes after his teaching, from approving to rejecting organ donation. He appraised himself that his ethics education was successful. This story tells us that students are very sensitive to education. In

other words, they can be manipulated very easily by intentional teaching. In the same sense, although the current teacher tried to be neutral when explaining the pros and cons of the topics, unconscious nuances might have affected the attitudes of students in a different way depending on the classes. Other possibility for the difference in their opinion among the classes may be the indigenous difference in opinions among the classes, although it has not been ascertained in hard data.

Among bioethics teachers in Japan, it was commonly recognized that the purpose of bioethics education was to raise the level of awareness of ethical problems, to provide information and knowledge of those issues, to raise students' sensitivity for ethical problems and to teach students methods of reasoning and logical argument (11). However, some ethics teachers believe that imposing their personal views to students is the right bioethics education; the above-mentioned manipulation may be a typical example (10). If only one view is taught as the right answer to controversial ethical issues to students, they may not be able to cope with the patient having a counterview against them as they work in clinics. Thus, manipulating students attitudes by teachers' rigid moral reasoning may only worsened the capacity of students to cope with ethical and moral dilemmas in clinical situation. Manipulation or coercion is a serious obstacle for education, particularly for ethics education. Students themselves can generate the issues to be explored from their own growing exposure and experience, and they can learn how to behave ethically by themselves when they are given the opportunity from ethical education (12). In this sense, the above-mentioned majority view of bioethics teachers is a reasonable approach for bioethics education (11).

There are several limitations in interpretation of the present results. First, although the influence by the lecturers could not be assessed precisely because of educationally sensitive connotations, to what extent the attitudes of students were affected during ethics education is the matter of concern. Second, this was a descriptive observational study, therefore contributing factors for their ethical views were not fully explored. Third, generalization may be difficult from such a single study. Nonetheless, the present results indicated that ethics education was a sensitive subject for medical students hence

the manner of ethics education by teachers was of critical importance.

Students commented that knowing different opinions was valuable in enhancing mutual understanding on ethical issues. The same is true for other professionals in clinical medicine as their cooperation is important in multidisciplinary approaches for the patient care. However, ethics education done by simply adding one to another profession did not work as a teacher intended (13). Presumably, facilitating inter-professional dialogue is more important than simply transferring ethical or moral reasoning. For example, knowledge of differences in the ethical views of medical and nursing students should be incorporated in the design of professional training so that ethical sensitivities can be respected and fostered between medicine and nursing (7). Ethical and moral views of medical professionals, even if they are different, may be useful for decision making by the patient and family in a way that they can refer plural opinions of healthcare professionals and reach to their own decision based on promoted moral values. It is hoped that ethics education will foster students' capacity to be able to respond to those needs of patients in the future.

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