
An insight into the ethical issues related to in vitro fertilization

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Abstract

Science is like a never ending flow of river. It keeps on updating, renovating and reinventing itself every moment and delights us with new sophisticated technology which provides us the options which never existed before. But the fact that a certain procedure is technologically possible does not make it ethically right. There are some speed breakers where we should stop and analyze about the deep social impact of the latest developed technology before embracing it with open arms. In vitro fertilization technique is such a double edged sword. Here I have focused on some of the important ethical issues which compel us to think to draw a boundary on the random application of the useful technologies.

INTRODUCTION

The new reproductive technologies have spawned new ethical concerns. These are controversial subjects, which have attracted wide media attention and public debate. Allegorical work of Huxley "Brave New World" has become almost prophetic in some of its dire predictions about in vitro fertilization and cloning. However, the law and public opinion all over the world have lagged behind the advances in artificial conception which have created a "brave new world" of possibilities of giving birth, never before considered possible - using a mix and match combination of sperms, eggs and uteri.

Infertility sometimes play havoc on a couple's life and compel them to see themselves as a failure to "be fruitful and multiply". According to the National Center of Health Statistics and the World Health Organization (WHO) between 8-10% of couples in the industrialized countries have reproductive problems. As problems of infertility and sterility become more common, people are turning to science for solutions and no amount of failures can deter them from trying any possible mean of satisfying their creative urge, the urge of giving birth that is deeply entrenched in their hearts as it has been rightly said that "Three things are never satisfied; four never say, "Enough": Sheol, the barren womb, the earth ever thirsty for water, and the fire that never says, "Enough."

After the initial enthusiasm, however, in many European countries society realized that, concomitant with the great

advances, limitations had to be established. From the beginning of this new therapeutic approach, Edwards [1], who was the pioneer of art, emphasized the importance of resolving the ethical issues involved.

Since 1978, when the world's first in vitro fertilization (IVF) baby Louise Brown was born with the expertise and assistance of Drs. Patrick Steptoe and Robert Edwards, the world has seen a rapidly increasing array of assisted reproductive technologies (ART). In 2001, >270 000 cycles of clinical infertility treatments occurred in Europe alone (ESHRE, 2005). With trends through out the globe toward more women working, later marriages and delayed child bearing, more couples desiring children are discovering that they cannot conceive naturally. As IVF becomes more successful, more accessible, and perhaps less expensive, more couples will consider the option of initiating pregnancy through the use of this technology. The original fear that babies fertilized in vitro would be abnormal, has not been substantiated by the early statistics and concerns now center on the complex philosophical, religious, legal and social issues surrounding the use of assisted reproduction. The increasing availability of assisted reproduction technology during the past 20 years has received a lot of public attention because of the ethical implications and thus needs to be scrutinized carefully,

THE PROCESS OF IVF

When couples are unable to achieve coital pregnancy, they often turn to assisted reproductive technologies. A popular

assisted reproductive technology is in vitro fertilization (IVF).

In the simplest case, a woman is given a course of hormone treatments to cause her ovaries to produce multiple eggs. The eggs are surgically removed just prior to ovulation. They are then placed in a culture dish with the father's sperm. During the next few days, the dish is periodically examined to see if fertilization has occurred. In approximately 48 hours, when the embryos reach the eight-cell stage, those that appear healthy and that are growing normally are transferred into the uterus, where, it is hoped, some will implant and develop full term. A woman may have to undergo several treatment cycles before she becomes pregnant.

SEVERAL CONTRADICTORY VIEWS

Success rates of this technique vary with the treatment, patient condition and with respect to other condition. Because of the stress and expense of the procedure, customers became attuned to clinic success rates. This put pressure on clinics to produce encouraging statistics, which they did by selecting their highest rate from among the dozens of possible numerators and denominators. A spate of newspaper articles attested to confusing success rates and inflated claims. A criticism beleaguered at some IVF providers is that the clinics are misleading infertile couples by not adequately informing patients of their chances of actually bringing a baby home from the hospital while others shield IVF providers by stating that the success rate in natural conception is not radically different from that achieved by the IVF clinics. Some of this confusion can be accredited to the fact that many clinics report their success rates in terms of pregnancies established, while patients are concerned with live, healthy babies. As Hesiod would say "We know how to speak many falsehoods which resemble real things, but we know, when we will, how to speak true things." In more complex permutations of in vitro fertilization, third parties who may be known or unknown to the couple, become involved in the reproductive process. It is now technically possible to use donated sperm, donated eggs, and donated embryos. Surrogate motherhood employs a "borrowed" uterus; one woman carries a fetus for another infertile woman and then gives the child after. In future, it may even be possible to use an artificial uterus and to bring an infant to term completely outside of the womb. While some argue that even "simple" IVF is objectionable, these variations on the simplest form of in vitro fertilization raise additional ethical questions.

FEW ETHICAL QUESTIONS

Debates on IVF are clouded by different ethical value systems and deep prejudices. Decision makers, medical practitioners, scientists, courts, and the public in general are facing new quandaries that involve controversies among profoundly held values.

The result of IVF is rewarding as far as the parents of the child is concerned. But if we take the issue to a deeper level, so many questions should be considered like

1. DEFINING INITIATION OF LIFE ETHICALLY?

"Amid all the talk about the ever-increasing availability of in vitro fertilization techniques, one issue is almost never mentioned; namely, what happens to all those extra embryos?"

Often surplus embryos are involved in process of IVF to substantially enhance the chance of pregnancy. Whether they are laboratory artifacts or not and when life begins are obvious questions. This puts a question mark on the "sanctity-of-life". So, theologians argue that we should give the embryo the "benefit of the doubt" and consider life at the very beginning [10]. and humans should be spatio-temporally continuous with the embryos and fetuses they once were. if human life initiates at fertilization then ivf is experimentation upon a human being and should follow the norms of that type of research. moreover, discarded zygotes or embryos lost in unsuccessful implantations, at present a foreseen possibility of ivf, would be human.

Report suggests that out of 150 attempts to implant human embryos only 4 actually were successful and only 1 was carried to term. Knowingly and willingly wasting human beings is unethical. On the other hand, if there is evidence that human life does not begin until after implantation, then IVF would not be unethical from the point of view of the zygote because only animal life would be present. The following query sums up this aspect of the issue: Is the zygote human life with potential or potential human life?

"Human life must be respected and protected absolutely from the moment of conception. From the first moment of his existence, a human being must be recognized as having the rights of a person."

When this fundamental moral line is violated or obscured, categories of people become devalued and they become easily used for utilitarian purposes. Human life is precious from the moment of conception; but, unfortunately this

respect for human life is being eroded in our contemporary society

CHROMOSOMAL AND OTHER CONGENITAL DEFECTS

Pregnancy is something of a lottery for all couples. However, compared with couples who conceive spontaneously, for those who require IVF, the lottery is weighted more heavily against a successful outcome at every stage of the process, not just conception. Stepping away from God's law always introduces chaos into our lives. Nowhere is this truer than in the case of in vitro fertilization. This is the reality alongside the hope that must be conveyed at counseling to all couples contemplating treatment. Throughout the short history of assisted reproduction there has been concern to monitor the safety of this important technology. It is well established that infants conceived following in vitro fertilization (IVF) are more likely to be born preterm, of low birth weight and to be a twin or higher order multiple than spontaneously conceived infants [20,21,22]. the evidence relating to the risk of birth defects is less clear.

An increase in chromosomal abnormality in IVF babies due to technical inadequacy has been observed [15]. numerical abnormalities alone were found in 71.7% of morphologically normal embryos [4]. and in those morphologically abnormal, only 3 out of 14 had a normal chromosomal complement [5]. congenital malformations include increased neural tube and cardiac defects [6].

In such unfortunate cases, should the parents be able to sue? In fact it is not easy to prove whether the fault lies in negligence during laparoscopic, IVF or implantation procedures [15]. the congenital disability act, 1976 helped little to solve the problem [15]. the warnock committee suggested a licensing system be used to control [2,3]. moreover, preimplantation diagnosis of genetic diseases may help to lower down the risk [8].

TURNING CHILDREN INTO COMMODITIES

The overwhelming media attention to ART implied ultimate control over sub fecundity, which may have unchained up reproductive intentions among sub fecund people and this desire may result in parents thinking the child as a possession instead of a gift. In vitro fertilization turns children into commodities. Who will judge about giving birth of the children in this world, parents are free to decide but are they having the rights to obstruct the natural process? When a couple is infertile, do they have the right, with the

aid of scientists, to circumvent the natural process of generation? Or are the creative powers which people share with God limited in such a way that they should stop short of interfering with natural processes such as the generation of new human beings, even though it is clear that a substitute method for the natural process can be found? Clearly, we have the right to modify our personal entity so that natural actions are more aptly performed. But do we have the right to change our personal entity so that natural actions are eliminated, the same results being achieved through artificial means?

SHOULD OLDER WOMEN BE OFFERED IN VITRO FERTILIZATION?

There are various questions in for and against of this issue. Some people are saying whether older women can cope with motherhood? What will be the potential health of the child? When the In vitro fertilization is rarely successful in older women then why we are taking a risk? Many such questions need to be answered yet. The chance of successful in vitro fertilization (which itself carries risks) in women aged over 45-50 is remote.

The table below shows the success of IVF at different stages among different age groups:

Figure 1

Age of Patient	Under 35				35 to 37				38 to 40				41 to 42				OD	FET
	30				35				39				41				NA	35
	A	B	C	D	A	B	C	B	A	B	C	D	A	B	C	D		
Total Cycles*	269	208	95	107	88	78	62	80	37	70	59	107	15	20	34	59	101	309
Clinical Pregnancy [%]	53	21	46	14	60	25	48	17	40	18	23	17	40	25	23	6	45	30
Average [%]	36				37				22				17					
Ongoing Pregnancy* [%]	44	16	38	13	50	20	41	15	27	12	16	10	40	20	20	3	38	20
Average [%]	30				31				14				14					
Multiple Pregnancies [%]	50	32	43	14	38	56	23	25	50	33	30	18	16	0	0	0	43	53
Average [%]	46				32				32				5					
Miscarriage [%]	16	22	15	12	16	20	13	14	33	30	28	42	0	20	12	50	15	32
Average [%]	17				16				34				17					
Ectopic [%]	0	6	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0
Medically Cancelled [#]	10				3				3				6					

Where A=Less than 2 failed IVF cycles ,FSH <=9.0 <= 600 IU/day gonadotropins >= 8 eggs retrieved , B= 2 or more failed IVF cycles FSH <=9.0 <= 600 IU/day gonadotropins >= 8 eggs retrieved, C = Less than 2 failed IVF cycles plus one or more of the following SH > 9.0 > 600 IU/day gonadotropins < 8 eggs retrieved , D= 2 or more failed IVF cycles plus one or more of the following FSH > 9.0 > 600 IU/day gonadotropins < 8 eggs retrieved

Source: IVF Outcome Statistics for 2006 Q1- Q4 (1/106 to 12/31/06) <http://www.haveababy.com/news/2006Preg.asp>

According to data from the Human Fertility and Embryology Authority, UK, in 1992 only one woman over 50 had a baby, in 2002 the number went up to 24. All the 24 women underwent IVF treatment. In 1992-2,360 babies were born as a result of IVF treatment. In 2002 the number rose to 7,740.

Below are some figures showing the rise in the number of older women receiving IVF treatment and having babies:

Figure 2

In 1992

Age	IVF Treatment	Babies born
40-44	1,438	77
45-49	140	15

In 2002

Age	IVF Treatment	Babies born
40-44	7,700	524
45-49	595	106
Over 50	96	24

One important concern on use of IVF on older women is based on the welfare of child as the age and health condition of old mothers to be may restrict them from being appropriate parents and this is often seen as infringement of the resultant child's rights. Instead of going into vexed issue of "fair share", countervailing argument against discrimination of older women for IVF treatment, I would suggest that except in most unusual circumstances it is not right to withhold fertility treatment on the grounds of the interests of the potential child. Society may feel entitled to refuse fertility treatment because of cost or because it does not regard infertility as a priority health concern, but it should not feel comfortable justifying such failure of provision in terms of the interests of the potential child.

RELIGION: OBJECTION TO PLAYING GOD

"Biotechnology is assuming a more predominant role in the generation of human offspring at the price of diluting our notion of man as a procreating being.... Man begins to see himself more and more as an individual who stands apart from what he produces, rather than as a being who is created in the image of a Triune God whose inner life is dynamically procreative."

Technologies of assisted reproduction such as in vitro fertilization (IVF) have been controversial on religious grounds since their inception, but nonetheless, within Islam, Judaism, Confucianism, Hinduism, and most forms of Christianity, adjustments have been made to facilitate the fertility of their adherents [24]. catholicism remains the only major world religion that unequivocally condemns the use of

ivf. the vatican argues that the research, development, and practice of ivf involve the destruction of embryos, i.e., the "destruction of human life," and by engaging in assisted reproduction, humans are technologically interfering with a process that should remain under god's dominion (ratzinger 1987). to the catholic church, surrogacy; artificial insemination by husband or donor; and ivf are not allowed, because procreation without sexual union is considered unnatural, and the church has been quite vocal about its criticism. church considers in vitro fertilization wrong because it separates human procreation from conjugal union. In the process, couples make themselves the masters of human life instead of its stewards. The strongest protest is on the use of these supernumerary embryos in research which hamper the divinity and dignity of human life.

CHILDREN ON HOLD: THE CASE OF FROZEN SUPERNUMERARY EMBRYOS

One of the by-products of the typical IVF treatment is the creation of supernumerary embryos. More embryos are brought into existence than can be safely replaced in the first cycle. The remaining embryos are frozen to be used later if the first trial proves unsuccessful or when the couple wants another child. However, not all embryos are replaced and not all parents indicate what should be done with them. The accumulation of frozen embryos has resulted in impressive numbers of embryos stocked in the freezers of the large fertility clinics. The exponential growth of their number urges on the ethical reflection on the fate of these embryos. In 1996, a British organization known as the Human Fertilization and Embryology Authority (HFEA) estimated that a total of 52,000 frozen embryos existed in the United Kingdom. In 2000 there were a total of 71,176 frozen embryos in Australia and New Zealand .Any legislation on limit of duration of preservation prior to the destruction of these supernumerary embryos underscores the potential pitfalls inherent in allowing political expediency to supersede basic 'humanness' and commonsense.

There are several ethical and moral issues surrounding the embryo freezing process. These include the following:

- Fate of the stored embryos on the death of couple 'orphaned' embryos.
- Ownership of the embryos if the couple divorce.
- Safety of embryo freezing.
- Concern that the length of time embryos have been kept in storage might have a detrimental effect on

the outcome of frozen embryo transfer and possible increase in fetal abnormalities. However, no long-term studies have been carried out since the age of the oldest child born as a result of frozen embryo transfer is only 14 years. In addition, there is no evidence that extended storage is detrimental to the outcome of treatment.

DILUTING PARENTHOOD: WEAKENING FAMILY BONDING

This reproductive revolution in the form of ART has had the ability to separate genetic parenting from gestational parenting and from social parenting. There have been concerns that the new reproductive technologies (NRTs) will irrevocably rend the fabric of ‘the family’. Mental bonding arises from intimate physical and emotional contact between parents and children. The IVF process actually results in a “dilution of parenthood,” Would the result of less physical and emotional contact in the generation of in vitro children weaken family bonding? Will in vitro children be looked upon as possessions rather than persons with their own rights and destinies? Will they be as secure as natural children? In an ethical evaluation, in order to understand the nature and consequences of a particular action, it is sometimes helpful to ask, “What if everyone does it all the time?” What effect would there be upon society and the family if the fertilization and even gestation of all children were achieved in a wholly artificial manner? The family has had a dramatic effect upon the evolution of the human species. Would the development of the family and thus the progress of society be weakened by IVF? Have the potential effects of such far-reaching changes in the process of human generation upon children, parents and society been evaluated?

FETAL REDUCTION: WHICH ONE OF YOUR CHILDREN WOULD YOU KILL?

Fetal reduction” is usually necessary to protect a live birth. Doerflinger comments that if one “looks only at the statistics, (4-5% of live births per one hundred fertilizations in the most successful programs), one would have to call the IVF procedure a fairly efficient method of abortion, with a 95 to 96% success rate.”

LEGAL STAND

Our judicial system has trailed woefully behind the complex bioethical dilemmas that accompany the rapid advances in biotechnology, biomedicine, and assisted reproductive technologies. Artificial conception raises the possibilities of

myriad problems - legal or otherwise, which may need resolution by legislation or national guidelines. These relate to:

- The question of embryo research and the time limits to be placed on it
- Basic questions such as - when does life begin? What are the rights of an embryo? “, remain unanswered.
- Guidelines on semen banking
- The child's right to access to information about his/her genetic background and mode of conception
- The legality of surrogacy
- The registration and monitoring of IVF clinics to ensure that infertile couples are not exploited.

This field requires legislative measures after considering these ethical concerns to prevent it from going down slippery slope of exploitation and abuse. Regulations preventing commoditization of embryos could save us from slouching toward a brave new world as we seek to redeem the great biomedical promise of our time.

WHAT SHOULD BE THE DIRECTION OF THE HEALTH SCIENCE RESEARCH?

The resources of society are limited and should be directed toward projects which will be beneficial for as many people as possible and which will alleviate serious health problems. Is infertility a serious health problem? Is IVF the best method for treating it? Have the efforts invested in IVF to date justified the results? Would a sufficient number of people benefit from IVF to justify the time and energy that would be necessary to develop it from the comparatively unsuccessful process that it is today to the point where it is more dependable as a means of generation?

Like these other questions are also there which are as follows: Whether we are bypassing the natural method of conception? Is it ethical to fertilization more embryos than it is needed? Who gave us the right to discard excess embryos? How can we destruct embryos in research? Whether it is right to facilitate the idea that embryos are commodities?

CONCLUSIONS

“When science and technology open doors that should not be

opened, a Pandora's box spews forth evils that menace humanity. We invented the atom bomb and germ warfare. These inventions are now part of human history forever. Scientists have opened another perilous door: they are manufacturing human life and using their product as an object of experimentation."

It is quite evident that a consensus on IVF cannot be achieved, since the whole area of infertility treatment by ART touches fundamental issues of life, family and society structures that are influenced by religion and tradition, which differ vastly among different cultures and societies.

In vitro fertilization is but one of the many approaching medical procedures capable of significantly modifying human activities and relationships. In order to balance responsibility with scientific research, we must ask not only, "Is it possible?" "How to do this?" we must also ask, "Is it ethically approvable to do?" or "what will be the altogether social impact?" At one end of the spectrum, will be people who feel that this technology allows couples to manipulate Nature to produce children and will object to it. At the other end will be people who believe that this technology is a triumph of man's ingenuity which can be used to overcome Nature's constraints. It will never be possible to reconcile these viewpoints - since these are based on deeply held personal beliefs and we will have to learn to live with this moral dichotomy. Since it may never be possible to have a consensus on this issue, this decision should not be left to moralists, or philosophers - or the government, or the doctors. Instead, the decision should be left to each individual couple, who provide the reproductive apparatus to create the baby.

References

1. Edwards, R.G. and Sharpe, D.J. (1971) Social values and research in human embryology. *Nature*, 231, 87-91.
2. Warnock Committee. A welcome report. *Br Med J* 1984; 86:207-208.
3. The Editor, the Warnock Committee. *Br Med J* 1984; 289:238-239.
4. Wimmers MSE, Van der Merwe JV. Chromosome studies on early human embryos fertilized in vitro. *Hum Reprod* 1988; 3:894-900.
5. Ma S, Kalousek DK, Zouves C, Yuen BH, Gomel V, Moon YS. *J In Vitro Fert Embryo Transf* 1990; 7:16-21.
6. Stanley FJ. In-vitro fertilization - a gift for the infertile or a cycle of despair? *Med J Aust* 1988; 148:425-426.
7. Verlinsky Y, Pergament E, Strom C. The preimplantation genetic diagnosis of Genetic diseases. *J In Vitro Fert Embryo Transf* 1990; 7:1-5.
8. Kirby JMD. Bioethics of IVF-the state of the debate. *J Med Ethics* 1983; 9:4548.
9. Hershlag A, Floch JA, DeCherney AH, Lavy G. Comparison of singleton and multiple pregnancies in in vitro fertilization (IVF) and embryo transfer (ET), *J In Vitro Fert Embryo Transf* 1990; 7:157-159.
10. The Editor. In vitro fertilization. *J Med Ethics* 1983; 9:187-188.
11. Cusine DJ. In vitro fertilization, legal and ethical implications. *Br J Hosp Med* 1984 111-114.
12. Dunstan GR. In-vitro fertilization: the ethics. *Hum Reprod* 1986; 1:41-44.
13. Gillon R. Pregnancy, obstetrics and the moral status of the fetus. *J Med Ethics* 1988; 14:3-4.
14. Mudge TJ. In vitro fertilization-a two-edged sword. *Clin Reprod Fertil* 1983; 2:235.
15. "Reimplantation of a human embryo with a subsequent tubal pregnancy." *The Lancet*. Apr. 24, 1976: p.880-882.
16. Johanson, Edy. *Lucy, The Beginning of Mankind..* Simon and Schuster, 1981.
17. J. Biggers. "In Vitro Fertilization and Embryo Transfer in Human Beings. *NEJM*. Feb.
18. Beral, V. and Doyle, P. (1990) Report of the MRC Working Party on Children Conceived by In Vitro Fertilisation. Births in Great Britain resulting from assisted conception, 1978-87. *Br. Med. J.*, 300, 1229-1233.
19. Helmerhorst FM, Perquin DA, Donker D and Keirse MJ (2004) Perinatal Outcome of singletons and twins after assisted conception: a systematic review of controlled studies. *BMJ* 328,261-264.
20. Jackson RA, Gibson KA, Wu YW and Croughan MS (2004) Perinatal outcomes in singletons following in vitro fertilization: a meta-analysis. *Obstet Gynecol* 103,551-563.
21. "He Won't Be My Son" Middle Eastern Muslim Men's Discourses of Adoption and Gamete Donation Marcia C. Inhorn (doi: 10.1525/maq.2006.20.1.94)
22. A. Boulton, Britain poised to extend storage of frozen embryos. *BMJ* 312 (1996), p. 10.
23. Hurst T, Lancaster P. Australian Institute of Health and Welfare. National Perinatal Statistics Unit and the Fertility Society of Australia. Assisted Conception Series No. 6: assisted conception Australia and New Zealand 1999, 2000, and 2001; available at <http://www.npsu.unsw.edu.au/Publications.htm>

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