

The modern trend of gender selection



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Prenatal sex selection is considered one of the major ethical dilemmas of today. With technology advancement, protection of the free will and privacy rights it has become lot easier to disregard this situation. Institutions supporting pre-implantation sex selection advertise it as a sign of female empowerment and her reproductive rights.

Sex selection is a technique where one can choose the sex of an unborn child for medical or non-medical purposes. Preferring a specific gender bring forth serious moral, social and legal implications. Selecting a particular sex over another depicts gender discrimination which gives rise to gender-selective abortions, eugenics and in several cultures - female infanticide.

Initially the technology was developed in order to help women who were carriers of lethal X-linked diseases such as Duchenne muscular dystrophy, Red-Green colour blindness or Haemophilia A. These women would undergo Pre-implantation genetic diagnosis (PGD) to choose the embryos which were free from the x linked diseases. In such cases implantations of the female embryos were favoured over male embryos which were discarded due to their probability of being 100% diseased.

The ethical basis of gender selection needs as much of an exploration and probing as it is required for its technological basis. For the stated reasons sex selection is actually illegal in several countries of the world such as China and United Kingdom but there are other countries like United States of America which didn't implement any rules or regulations against this genetic discrimination till now.

Methods:

Sex selection techniques have been through very unscientific and mythical stages during the last couple of centuries. In olden days the ratio of people to desire a son was greater than of today and old wives tales were more admired than what doctors would have offered as a cure.

The recipe to make a son stated that the couple should have intercourse on nights with a full moon, the weather should be dry, the man should hang his pants on the right side of the bed, and he should wear boots while having intercourse, bite the ears of his wife and cut off his left testicle! Women were informed to eat red meat and sour foods before intercourse, let an infant sit on their laps on their wedding day, wear males clothing on their wedding night, and pinch their husband's right testicle!

Prenatal diagnostic screening became the forerunner of prenatal gender selection with the help of techniques like Amniocentesis, chorionic villus sampling and ultrasound screenings. Apart from revealing any abnormality which might be present in the embryo; these techniques can also reveal the gender of a child. These techniques are expensive, time consuming and sometimes invasive.

Another method for sex selection which has been invented by Dr. Landrum Shettles is based on a hypothesis that X and Y sperms are characteristically different from each other. Shettles method tries to manipulate these differences so they "influence" the sex of an embryo before conception. He also wrote a book on how to choose the sex of your baby. He concluded that the X bearing sperms survive longer in the cervix and are slower than their Y

counterparts because of their DNA content while Y bearing sperms survive for less period of time as compared to X bearing sperms; they are smaller and quicker to swim due to their less DNA content. He theorized that couples who desire a female child should have intercourse around 48 hours earlier before the ovulation so the Y bearing sperm dies off while couples who desire male child should have intercourse within 12 hours or near to the ovulation period so that Y bearing sperms can swim faster to fertilize an ovum. He also states (for the couples who desire a female child) that woman should avoid having an orgasm as X bearing sperms requires acidic environment. His hypothesis is nowhere near the actual facts of science of pre-selection.

In vitro fertilization (IVF) forms the basis of pre gender selection where an ovum (taken from a woman) is fused by the sperm (taken from her partner) outside her body in a Petri dish. These newly formed embryos will then undergo pre-implantation genetic diagnosis where a single cell from each embryo will be biopsied. Biopsy results reveal sex of the embryo and genetic abnormalities – if present. Only selected disease – free embryos of desired sex will then be implanted in a woman.

Ericsson Albumin Sperm sorting was considered one of the most fruitful and realistic methods which came into being in 1970 by Dr. Roland Ericsson who got it approved and licensed for livestock breeding. This technique manipulates the swimming-speed differences of sperms which carry X and Y chromosomes. The X chromosome weights more than Y chromosome and hence swims slower. Ericsson used protein solution of albumin which acted as a sluggish-race gradient and created differences in the sperm speeds. It

created a minute difference of 10% between the speeds of the human sperm and was not as reliable as it should have been.

Flow-cytometry sperm separation makes use of laser beams of a single wavelength. The beam of laser wave is aimed at the sperm solution where the sperms are dyed beforehand; they are then separated according to their weight and the percentage of light which is emitted by these different sperms.

Flow cytometry principle is used in the current popular method known as MicroSort. This process differentiates between the DNA content of the X and Y chromosomes. At the end of the process the “ enriched” sperm samples are used to design desired sex of the baby through In vitro fertilization. The X chromosome in human carries 2. 8% more DNA than its Y counterpart. As the difference isn't so huge the technique doesn't pick up very sensitive fluorescence wavelengths emitted by the different sperms. It is still better than the traditional sex selection methods but not entirely accurate. To top it all it cost about \$5000 and used by couples who can actually afford it. The probability of conceiving a girl is 93% while the probability to conceive a boy is only 73%.

Discussion

Legal issues:

Due to the controversial nature of sex selection it has been restricted in many countries and government of these countries keeps a strict tab on the institutions which offer pre-implantation sex selection for medical reasons.

There are two institutions at the moment 1) American society for

reproductive medicine (ASRM) which is based in United States of America and 2) Human Fertilization and Embryology authority (HFEA) which is based in Britain.

ASRM is composed of colossal medical community who can make their views about sex selection a state or federal law but HFEA is a government body which can decide if clinics are allowed to perform sex selection for non-medical reasons such as family balancing. HFEA banned gender selection in 1993 for all the non medical and social purposes while ASRM holds entirely different point of view commenting that if sex selection is justified to help parents to avoid having children with sex linked diseases than it makes complete sense if parents desire a particular sex in their child specially if they already have a child of the same gender previously or if the couples are planning to have just one child.

Ethical issues:

The ethical implications of sex selection raise many moral concerns. The main trepidation looming large is of sexual discrimination. Gender selection may lead to preference for one gender over other especially in Asia, East Asia and several third world countries where financial conditions of the population force them to yearn for a male child. Girls are considered as a burden because parents have to pay huge sum of dowries when they are marrying them off. In these countries having a male child is necessary because sons carry the family lineage ahead, earn money for parents and take care of them financially.

The other important concern is of eugenics where several unwanted or un-fit characteristic of the child is selected against. Diseased embryos are aborted; un-wanted females are aborted, other genetic abnormalities containing embryos which do not have any phenotypical symptoms are also selected against in order to bring a healthy and normal child in the world. It is feared that soon couples would want to design their own babies with desired skin colour, eye colour and intelligence.

This can demoralize and destroy a child's relationship with parents if the designed child did not fulfil parent's expectations. It can also create a lifelong psychological torture for both parties. Children who feel unwanted and neglected start to physically abuse themselves and opt for gender change to become what their parents imagined them to be.

It is also debated that gender selection can minimize child abuse; for example if the father wanted a son but had daughter instead then it can lead to domestic and child violence. If the couple undergoes PGD then the family ties can remain strong and the child will feel wanted and more loved.

Moreover it is also counted in reproductive rights of parents who can plan their family accordingly. This way they can lead a better life with better financial facilities, can save for their children's higher education and enjoy the luxuries of the world.

Social issues:

Apart from the ethical issues; gender selection discrimination is different from region to region. One-child policy became a law in China due to population boom in the early 1900's. Due to this policy the male to female

ratio became highly abnormal as mostly Chinese couples desired for males rather than females. Males are considered the earning wheel of the family and physically stronger than females. One-child policy also gave rise to female infanticide as more than six million females went missing due to abortions or infanticide in Asia (high percentages in India and China) in the last fifty years.

In most of the rural areas of India women are forced to get pregnant again right after the childbirth (if the baby was a girl) in hopes of producing a son. Usually these women suffer domestic violence and abuse on daily basis by their husbands. Most of the female children are either buried alive, thrown in the garbage bins or on the streets. If the females are at puberty age, they are sold to sex traffickers for prostitution and to rich tourists, who marry these young girls for their summer vacations, sell them at brothels and go back home.

Religious issues:

The major religions in the world teach the masses to consider all females and males equal to each other. Before the advent of Islam in the Arab world female condition was deplorable. It was considered a shame to father a female child and female infanticide was practiced openly. Prophet Mohammad (peace be upon him) tried to change the mindsets of people of Arabia telling them that females are the light of God and one who will raise a female child, educate her and marry her with a good husband will go to paradise. He also stated that females are not a burden to their fathers as they are as valuable as a male child and will help their parents in old age.

Even during the Pre-Christian era; female infanticide was widely practiced in the Roman Empire. After Christianity was extensively accepted as a religion of the state, strict laws were enforced to save the females by punishing several mothers who were found guilty of murdering their female child.

The gender gap is also increasing in many third world countries for example in India where the religious background comes from Sanskrit literature. In many Sanskrit treatises like Sutras, Mahabharata and Siddhartha it is mentioned several times that the sole purpose of the marriage is to produce a son so he can carry on his father's name.

Human beings face predicaments in accepting and practicing these religious teachings because the holy books and religious literature speak to men and order them to protect females as they are soft and emotionally weak.

Religious scholars also mention to control their sisters, daughters and wives so that they do not go astray and follow the righteous path.

Such interpretation of religious foundation together with thousand years old cultures leads to common belief that women are weaker sex and they need constant care and protection. It also demonstrates that men should keep a constant watchful eye on women because they can be easily distracted.

Conclusion

Many international organizations and group of individuals have started protesting against the concept of using sex selection for social purposes.

They have sent open letters to organizations like American Society for Reproductive Medicine (ASRM) and other U. S. fertility clinics in order to

express their concern over gender selection and the implications it has on the society.

They have stressed upon several important issues like there is never a good reason to select a gender of your child except in the case of prevention of medical maladies. It stated that most of the advertisements from American Society for Reproductive Medicine (ASRM) focus on South and East Asian Americans where the ratio to desire a male is higher, also the desire to have fairer skin and light eyes can start a disastrous concern of eugenics among them.

Various surveys reveal that in U. S. 35% of the parents would like to go for pre-implantation genetic diagnosis and if out of these 35%, 2% of the parents would actually undergo the Pre-implantation sex selection it would create \$200million a year industry which will invite more scientists and investors to find better options for the future.

Sex selection doesn't intrigue humans alone. The farming industry foretells that if they start using sex selection for their livestock; they would save up to \$700 million a year. This is because meat industry would like to have more bulls and dairy farmers would prefer cows for milk. Sex selection in animals can therefore save money and put it to a better use.

Further Work:

There are still no rigorous regulations on pre-implantation gender selection but quite a few people have stepped forward to enact on policy-making. It is to be considered that there is wide range of opinions which needs to be satisfied. Before making any policies a further understanding of the sex

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selection techniques is necessary. It is also important to weigh the pros and cons of this technology and how the disadvantages can be turned around in favour.

Judith et al articulates that before creating a policy, licensing and certification of the pre-implantation sex selection providers is necessary. This will limit the number of institutions who provide sex selection for social and non medical reasons. The second best thing to do will be, to encourage consumers for informed consent and if they don't comply with it, they'll have to face criminal penalties. She also thinks that it will be gratifying to set up campaigns and discussion groups in order to discuss the moral and ethical effects of pre-implantation sex selection.

The law makers need to assess the urgency of these developing problems. Is it not playing God if everyone starts to self-determine what is normal and what is abnormal? And what about the embryos which were made for in vitro fertilization but were not used for implantation? Is it fair to eliminate them? They very well had the potential to grow into a full grown human as much as their implanted counterparts.

Every human being dream of a happy family with healthy children and many would undergo desperate measures, dangerous procedures and unethical means to have them. The challenge is to accept the limit where one's moral, social, ethical and religious boundaries end. The question which resonates with every performance of social sex selection is whether or not desiring a son give rise to the centuries old discrimination against females? Are we not being sexist and starting a new era of eugenics? Can't we aim this valuable

technique of sex selection and create equality and appeal among human kind?