Is Fetal Sex Selection Harmful to Society?

Instructions: Type out the answers to the questions below.

Questions:
1. According to Merhi and Pal, what are the risks of allowing PGD in cases of non-medical necessity?
2. According to the American College of Obstetricians and Gynecologists, what is their response to each of the possible four positions that could be taken with respect the fetal sex selection?
3. Do you believe that fetal sex selection is harmful? What points from either author did you find most compelling?
ISSUE 13

Should Parents Be Allowed to Choose the Sex of Their Children?


ISSUE SUMMARY

YES: Physicians Z. O. Merhi and L. Pal discuss the conditions under which selection of the sex of a child does not breach any ethical considerations in family planning among infertile couples.

NO: American College of Obstetricians and Gynecologists' Committee on Ethics supports the practice of offering patients procedures for the purpose of preventing serious sex-linked genetic diseases, but opposes sex selection for personal and family reasons.

Gender is influenced before conception, in making decisions to carry a fetus to term. The potency of sex and gender as explanations for differences between males and females escalates early in life. By early childhood, a host of differences are observed between boys and girls as children internalize a sense of themselves and others as gendered. Concern has been raised about inequities and deficits resulting from the effects of sex and gender.

Research has consistently documented the preference and desire for sons in twentieth-century America and in other cultures. In many cultures, such as India and China, maleness means social, political, and economic entitlement. Men are expected to support their parents in their old age. Moreover, men remain with their family throughout life; women, upon marriage, become part of the husband's family. Thus, women are traditionally seen as a continuing economic burden on the family—particularly in the custom of large dowry payments at weddings. In some cultures if a bride's family cannot pay the demanded dowry, the brides are often killed (usually by burning). Although dowries and dowry deaths are illegal, the laws are rarely enforced.

In such cultures, there is an expressed desire for male children and an urgency to select fetal sex. Recently, sex-determination technology is most
commonly used to assay the sex of fetuses, although in many cultures the use of such technology has been banned. When the fetus is determined to be female, abortion often follows because of cultural pressures to have sons. Such sex-determination practices have led to many more male than female infants being born. The gap grows even wider because of a high childhood death rate of girls, often from neglect or killing by strangulation, suffocation, or poisoning. Furthermore, women are blamed for the birth of a female child and are often punished for it (even though, biologically, it is the male’s sperm, carrying either X or Y chromosomes, that determines sex).

Research shows that in contemporary America, 78 percent of adults prefer their firstborn to be a boy. Moreover, parents are more likely to continue having children if they have all girls versus if they have all boys. Faced with having only one child, many Americans prefer a boy. The availability of sex-selection technology in the last quarter of the twentieth century was met with growing interest and widespread willingness to make use of the technology.

Available technologies for sex selection include preconception, preimplantation, and postconception techniques. Preconception selection techniques include folkloric approaches like intercourse timing, administering an acid or alkaline douche, and enriching maternal diets with potassium or calcium/magnesium, all thought to create a uterine environment conducive to producing male or female fetuses. There are also sperm-separating technologies whereby X- and Y-bearing sperm are separated, and the desired sperm are artificially inseminated into the woman, increasing the chance of having a child of the chosen sex.

Preimplantation technologies identify the sex of embryos as early as three days after fertilization. For sex-selection purposes, the choice of an embryo for implantation is based on sex. Postconception approaches use prenatal diagnostic technologies to determine the sex of the fetus. The three most common technologies are amniocentesis (available after the 20th week of pregnancy), chorionic villi sampling (available earlier but riskier), and ultrasound (which can determine sex as early as 12 weeks but is not 100 percent accurate).

The American demand for social acceptance of sex-selection technologies has increased in the past decade. Preconception selection techniques are becoming quite popular in the United States, and preimplantation technologies (though more expensive) are also more frequently used. It has become more and more socially accepted to use prenatal diagnostic technologies to determine fetal sex. But incidence rates for sex-selective abortions are difficult to obtain. There is mixed opinion about the frequency of sex-selective abortions, tinged by political controversy.

In the following selections The American College of Obstetricians and Gynecologists’ Committee on Ethics assert that fetal sex selection is always unethical, except in the case of preventing sex-linked genetic diseases. They suggest that parents are really not interested in the genitalia that their infants are born with. What they are really choosing is an “ideal,” defined by gender role expectations: a boy dad can play ball with or a girl who can wear mom’s wedding gown when she marries. In contrast, Physicians Merhi and Pal argue that a desire for gender balance in the family is ethical.
Gender "Tailored" Conceptions: Should the Option of Embryo Gender Selection Be Available to Infertile Couples Undergoing Assisted Reproductive Technology?

Preimplantation genetic diagnosis (PGD) was introduced at the beginning of the 1990s as an adjunct to the prenatal diagnostic armamentarium, allowing for genetic diagnoses earlier in the gestational period. This diagnostic option allows couples the opportunity of reaching decisions regarding terminating a genetically compromised fetus earlier in the course of the pregnancy, thus minimising the psychological stress as well as medical risks associated with terminations performed at more advanced gestations. Since its inception, PGD testing has been utilised for evaluation of a spectrum of inherited diseases (e.g., cystic fibrosis, sickle cell disease, hemophilia A and B, Lesch-Nyhan syndrome, thalassemia, Duchenne muscular dystrophy, and recently, Marfan's syndrome) allowing parents to avoid the lengthy, fearful wait for results of traditional testing (e.g., amniocentesis, chorionic villous sampling) while their pregnancy continues to progress. However, the application of PGD has raised multiple ethical issues, many of which were addressed by the President's Council on Bioethics in a recent paper in which the council sought to improve the application of PGD. One of the thorniest issues currently being confronted is the use of PGD for gender selection.

The methods used for preconception gender selection have evolved over time. An influence of coital timing on the gender of the conceptus was proposed by Shettles, who described an exaggerated motility by the smaller Y-bearing sperm in the mid cycle cervical mucus, and hypothesised that there would be male offspring dominance if the timing of coitus was proximate to ovulation. The length of the follicular phase of the menstrual cycle (i.e., period of maturation of the ovarian follicle and the contained egg therein), risk modifications by changing vaginal pH, possible effects of ionic concentrations in the woman's body, susceptible to dietary modifications and pre-fertilisation separation of X-bearing from Y-bearing spermatozoa, have all been stated to
d Conceptions: Can Be Available on Be Available Should Undergoing productive
ogy?

d introduced at the beginning of diagnostic armamentarium, allowing the course of the pregnancy, thus medical risks associated with it. Since its inception, PGD has been successful in treating inherited diseases (e.g., DMD, Lesch-Nyhan syndrome, Marfan's syndrome) and for results of traditional testing in certain cases. While their pregnancy PGD has raised multiple ethical concerns, the President's Council on Bioethics has recommended efforts to improve the application of this technology in the future.

Selection have evolved such that the conceptus was eliminated on the basis of gender by the smaller percentage of patients. It has been acknowledged that there was a need for a more precise and effective process (i.e., period determination, risk modification, concentration in PGD). It has been stated to the Institute of Medicine and National Academy of Sciences that PGD should be considered as an option for the selection of gender in assisted reproduction, especially when there is a risk of producing a child with a genetic disorder.

Demonstrate varying degrees of success in gender determination. However, while some of these methodologies offer successes greater than predicted by the "toss of a coin," the results remain far from "guaranteed."

Among the prominent motivations driving a demand for preconception gender selection is the desire for children of the culturally preferred gender, and to achieve gender balance within a given family. Recently, an interest in PGD testing for the purpose of "gender selection" for social reasons seems to be escalating, although no concrete data are available. This use of PGD for "family tailoring" has engendered debate and controversy. While the acceptability of PGD for traditional medical indications is generally condoned, utilisation of this modality for non-medical purpose has generated ethical concerns. The American College of Obstetricians and Gynecologists has taken a clear stance on this issue as reflected in the following committee opinion, "The committee rejects the position that gender selection should be performed on demand. . . ." Additionally, the American Society of Reproductive Medicine states that "in patients undergoing IVF, PGD used for gender selection for non medical reasons holds some risk of gender bias, harm to individuals and society, and inappropriateness in the use and allocation of limited medical resources." An introspective assessment of the published literature on clinical practices suggests that, while the stance of the principal governing bodies on the issue of PGD for gender selection is unambiguous, the actual practice of the technology of "gender tailoring on demand" is not uncommon. In fact, a recent survey of IVF clinics in the United States, an access to and provision of PDG services for sex selection was acknowledged by as many as 42% of the providers of assisted reproductive technique (ART) services; furthermore, beyond these geographical boundaries, the literature is replete with documentation of couples undergoing ART specifically wishing for family completion and/or balancing requesting that embryo(s) of a preferred gender be utilised for transfer.

Acknowledging the contrasting stance of the licensing and governing bodies on ethical concerns related to a wider availability and access to gender selection option versus the prevalent practices (as mentioned above), the authors herein attempt to explore whether the explicit utilisation of PGD for the purpose of gender selection by the infertile couple already undergoing a medically indicated ART procedure encroaches on breach of basic dictates of medical ethics.

It is currently not the "standard of care" (an individualised paradigm of diagnostic and treatment plan that an appropriately trained clinician is expected to pursue in the care of an individual patient) to perform PGD in the absence of a medical indication. However, "standards of care" should remain receptive to evolving scientific data, both that which supports and that which stands in opposition to changes in the standard. Accordingly, the opportunity to explore ethical arguments for and against the utilisation of PGD for gender selection by infertile couples undergoing ART is undertaken in this paper. This process might enable the patient and the provider to make informed and rational decisions when considering PGD utilisation for such a non-medical indication.
Beneficence and Non-Maleficence

Within the context of beneficence-based clinical judgment, a physician’s inherent obligation towards his/her patient (i.e., the potential benefits of PGD) must be balanced against the risks of the proposed technique. For the infertile patients undergoing ART, and therefore already anticipating a procedure with some treatment related inherent risks, that is, minimal and yet real risks of anaesthesia, infection, bleeding, and ovarian hyperstimulation syndrome (a potentially lethal complication of attempts at inducing multiple ovulation), PGD for targeted genetic anomalies has been shown to improve ART outcomes (i.e., successful pregnancy following treatment), and to significantly reduce the risk of aneuploidy and miscarriage rates in a high-risk population. We believe, that in this patient population, use of additional gene probes per request, that is, for sex chromosomes, would not in any way jeopardise the principle of beneficence.

The limiting factor within this prototype of allowing PGD for gender selection “on request” will be the availability of an adequate number of cleaving embryos. A small yet real possibility does exist for a failure to achieve an embryo transfer either because of evidence of aneuploidy in the entire cohort of the tested embryos, a scenario that can be easily conjured for an older woman, or because of a procedure-related embryo loss due to the mechanisms used to create an opening in the zona pellucida (a membrane surrounding the egg) for the explicit purpose of removing a cell from the dividing embryo for PGD. The proposed benefits of PGD for the sole intention of gender selection in a patient undergoing ART must be thus balanced against the small yet real risks of embryo loss, and even failure to achieve an embryo transfer, as well as the incremental costs incurred (approximately $2500 per cycle above the costs of approximately $7500–$10000 for the IVF cycle and related procedures). To date, there are no reports of increased identifiable problems (fetal malformations or others) attributable to the embryo biopsy itself. On the contrary, data suggest that PGD for aneuploidy screening may significantly reduce the risk of spontaneous abortions and of aneuploidies in the offspring of women undergoing IVF, particularly so in the reproductively aging patient population.

The principle of beneficence is maintained in offering PGD to couples undergoing ART (the analysis of risks and benefits being based on the physician’s assessment, and the risks being primarily confined to the embryo, and not to the patient). However, the same may not hold for otherwise fertile couples. In that case, the female partner would be subjected to medically unindicated risks as well as substantial financial costs ($10000–$15000), driven solely by a desire for a child of the preferred gender. Such couples may represent a “vulnerable population” whose vulnerability lies within a potential, enticed by a promise of a child of the preferred gender, for making impetuous decisions regarding an expensive and medically non-indicated intervention that has an uncommon, yet real potential for health hazard. For the fertile population, this desire may lead them to “medicalise” the spontaneous procreative process, transforming it into a controlled and expensive process.
While the authors believe that the principles of beneficence and non-maleficence are upheld within the context of allowing couples anticipating undergoing ART for the management of infertility, we believe that the medical community needs to pause and ponder on any potential for generation of unwanted surplus embryos of the undesired sex prior to declaring this as an "acceptable practice." Aspects for further "beneficence" may be appreciated within the folds of this latter concern as couples may consider donation of discard embryos of the non-desired gender to the less fortunate infertile patients. These plausible scenarios must be discussed at length with any couple wishing to discuss the possibility of embryo gender selection while undergoing a medically indicated IVF.

In contrast to an infertile patient anticipating undergoing medically indicated IVF and requesting embryo gender selection, a similar request from an otherwise fertile couple merits additional consideration. A decision to discard embryos of an undesired gender may be less onerous to a productively competent individual, although data in support of such a conjecture are lacking. Whether or not this concern regarding abandonment of the "unwanted" embryos is legitimate depends on the perception of the status accorded to the embryos. Although debatable, some would agree that since embryos are too rudimentary in the developmental paradigm to have "interests," there is simply no basis upon which to grant the embryos "rights." Additionally, the ethical principle of non-maleficence is not violated since this principle is directed to "people" rather than "tissues." Future debates on this particular concern might be needed to settle this issue.

To summarise, the performance of PGD per request specifically for gender selection in an infertile couple already planning to undergo ART for medical indications may not breach the principle of beneficence nor hold undue harm for the patient. However, the principles of justice and autonomy must also be considered.

Justice

The principle of justice requires an equitable distribution of the benefits as well as the burdens associated with an intervention. While at one end of the spectrum, this concept addresses the concern of societal gender imbalance resulting from utilisation of PGD for gender selection, at the other extreme, there may be concerns of gender imbalance in relation to socioeconomic strata, as an economic differential in the utilisation of ART services is well recognised.

Concerns are voiced regarding a potential of PGD, if deemed acceptable for the explicit purpose of sex selection, for disrupting the societal gender balance. Indeed, examples of gender preferences abound in existing communities and societies. For example, in certain regions of China, termination of pregnancies, infanticide, and inferior medical care for baby girls have created a shift in the population to a ratio of approximately 1.5 to 1 favouring males. Gender preference for the firstborn can thus overwhelmingly favour male gender, particularly if "one child per family" population policies continue to be implemented. Similarly, a preference for male offspring is recognised in
other regions across the globe including India and the Middle East. In contrast, in Nigeria, anecdotal tradition suggests that although a son is beneficial for propagating the family's name, a female infant is preferentially hoped for, as a daughter holds promise for eventual financial gains at the time of marriage. Similarly, in Haiti, a female firstborn is welcomed as a potential caregiver to the future siblings (personal communication).

It is important to appreciate that concerns voiced by the community regarding a potential for creating a gender differential across global regions if PGD for sex selection while undergoing a medically indicated IVF indeed achieves wider acceptability, while not unreasonable, appear based on "snapshot" views of cultural preferences. One is reassured by results of a recent cross-sectional web-based survey of 1197 men and women aged 18–45 years in the United States which revealed that the majority of those surveyed were unlikely to utilise "sperm sorting," an already existing, cheaper and less invasive technology, as a means for preferential preconception gender selection (sperm sorting employs flow cytometric separation of the 2.8% heavier "X chromosome" from the relatively lighter "Y chromosome" bearing sperm, thus providing an "X" [destined to contribute to a female fetus] or "Y" [destined to create a male fetus] enriched sperm sample for subsequent utilisation for artificial insemination or ART). Given the lack of enthusiasm for this simpler modality for preconception gender selection (an intervention that involves no risks to the patient or the embryos), at the population level, individuals are even less likely to opt for a more aggressive approach, that is, proceeding with ART and PGD, just for gender selection reasons. Similarly, a study from England on 809 couples revealed that gender selection is unlikely to lead to a serious distortion of the sex ratio in Britain and other Western societies. Yet another survey performed on a sample of German population (1094 men and women aged 18–45 years were asked about their gender preferences and about selecting the sex of their children through flow cytometric separation of X- and Y-bearing sperm followed by intrauterine insemination), revealed that the majority did not seem to care about the sex of their offspring and only a minority expressed a desire for gender selection. These authors concluded that preconception gender selection is unlikely to cause a severe gender imbalance in Germany. Similar conclusions, that is, the lack of an overwhelming interest in preconception gender selection were deduced in a survey of infertile Hungarian couples with regard to utilisation of sperm sorting for gender selection. These data are thus reassuring and suggest that, at least in the developed world, even if given access to technology facilitating preferential gender selection, and subsequently while undergoing a medically indicated IVF, use of such methods is not likely to significantly impact on the natural sex ratio within the communities. It needs to be appreciated however, that surveys generated within the industrialised nations are not representative of global perceptions regarding access to and utilisation of similar technology for ensuring conception of progeny of a preferred gender.

Another concern regarding the possibility of breaching the principle of justice is the ART-related cost as well as the additional expenditure related to the use of PGD. The financial burden is likely to preclude a section of the
fertile population from using this service, hence holding the potential for a breach in the principle of justice. However, given that utilisation of PGD for gender selection may be limited secondary to financial constraints, such a differential would render significant shifts in population gender distribution very unlikely (like in ART, the issue of social and economic differences pose a distributive bias here that is beyond the scope of our paper).

Given the lack of information regarding the magnitude of utilisation of technologies for gender selection (PGD or sperm sorting) within societies, it may not be unreasonable to suppose that PGD would not be accessible to large enough numbers of people to make a real difference in the population gender balance. A potential donation of the undesired embryos by couples who opt to utilise PGD for gender selection is likely to negate any concerns regarding eventual disturbance of the sex ratio, enhance the balance towards “beneficence” by offering a possibility of parenthood to those who would otherwise not be able to afford the cost associated with ART and thus address some concerns regarding the principle of “justice” voiced earlier.

To summarise, although the existing literature touches upon aspects of preferential and differential biases in terms of gender preferences in the various communities around the world, data specifically addressing this aspect in infertile couples undergoing medically indicated ART are nonexistent, and voice a need to more formally assess the use of preconception gender selection technologies globally, so as to fully evaluate the impact of these practices on the principle of justice. It follows that performing PGD for gender selection might be consistent with substantive justice-based considerations until more thorough analysis for societal disruptive imbalance of the sexes has been performed.

**Patient Autonomy**

The freedom to make reproductive decisions is recognised as a fundamental moral and legal right that should not be denied to any couple, unless an exercise of that right would cause harm to them or to others. Access to and use of contraceptive choices, recognition of a woman’s right to request for a termination of an unplanned and/or undesired pregnancy, and an emerging acceptance of an individual’s right to determine his or her sexual orientation reflect evolving social and societal perceptions as relates to “reproductive autonomy,” the authors believe that utilisation of PGD for the purpose of gender selection by infertile couples already undergoing ART may be incorporated within this paradigm of “reproductive autonomy.” Across the societies, while parental autonomy in shaping the social identity of their progeny (behaviour, education, attire . . . etc.) is an acceptable norm, this debate proposes that, in defined clinical situations, allowing parents to shape the genetic identity of a much-desired child will be within the purview of patient autonomy.

It is of interest that most of the ethical debates around use of PGD for gender selection stem from concerns regarding termination of pregnancies. Opponents to use of PGD for gender selection project that acceptability of such a practice will add yet another indication to justifying pregnancy termination, namely termination of a conceptus of an undesired gender. This latter
concern however pales against the escalating requests for “selective reduction” of fetuses (a procedure in which one or more fetuses in a multiple pregnancy is/are destroyed in an attempt to allow the remaining embryo/s a better chance to achieve viability as well as minimise health risks to the mother) resulting from ART, driven by patients’ “demands” for transfer of surplus embryos so as to ensure “success,” albeit at escalating health risks for the mother and the fetus(es). If indeed a request for “selective reduction” of fetuses by an infertile couple is an acceptable exercise of parental autonomy, the authors put forth that compliance with a request for “gender selection” by an infertile couple undergoing ART be viewed in a similar vein.

By the same token of parental autonomy, the couple has to assume all responsibility of consequences resulting from such a decision, including a possibility of not achieving an embryo transfer secondary to failure of embryos to demonstrate ongoing development following the biopsy, a possibility of all embryos being of the less desired gender, as well as of the child of the desired gender failing to conform to their expectations! Extensive counselling of the couple must therefore be an integral part of the consenting process, if couples and practitioners are considering utilisation of such procedure.

**Conclusion**

While concerns regarding a potential for breach of ethical principals related to a generalised acceptance of such a practice are real, this paper attempts to evaluate the integrity of principles of ethics within the context of acceptability and use of PGD for the purpose of gender selection, exclusively in patients undergoing ART for the management of infertility. The authors believe that given the current prevalence of such practices despite a stance to the contrary taken by the licensing bodies, the needs and desires of an individual seeking care within the context of the overall society’s perspective be considered; this extrapolation seems not to breach the basic four principles of ethics, nor does it hold harm for the patient/embryos. Accessibility of PGD for gender selection to couples undergoing ART for management of infertility is unlikely to influence the gender balance within this society and is very distant from being in the “bright-line” areas described by the President’s Council on Bioethics.
Sex Selection

Sex selection is the practice of using medical techniques to choose the sex of offspring. Patients may request sex selection for a number of reasons. Medical indications include the prevention of sex-linked genetic disorders. In addition, there are a variety of social, economic, cultural, and personal reasons for selecting the sex of children. In cultures in which males are more highly valued than females, sex selection has been practiced to ensure that offspring will be male. A couple who has one or more children of one sex may request sex selection for "family balancing," that is, to have a child of the other sex.

Currently, reliable techniques for selecting sex are limited to postfertilization methods. Postfertilization methods include techniques used during pregnancy as well as techniques used in assisted reproduction before the transfer of embryos created in vitro. Attention also has focused on preconception techniques, particularly flow cytometry separation of X-bearing and Y-bearing spermatozoa before intrauterine insemination or in vitro fertilization (IVF).

In this Committee Opinion, the American College of Obstetricians and Gynecologists’ Committee on Ethics presents various ethical considerations and arguments relevant to both prefertilization and postfertilization techniques for sex selection. It also provides recommendations for health care professionals who may be asked to participate in sex selection.

Indications

The principal medical indication for sex selection is known or suspected risk of sex-linked genetic disorders. For example, 50% of males born to women who carry the gene for hemophilia will have this condition. By identifying the sex of the preimplantation embryo or fetus, a woman can learn whether or not the 50% risk of hemophilia applies, and she can receive appropriate prenatal counseling. To ensure that surviving offspring will not have this condition, some women at risk for transmitting hemophilia choose to abort male fetuses or choose not to transfer male embryos. Where the marker or gene for a sex-linked genetic disorder is known, selection on the basis of direct identification of affected embryos or fetuses, rather than on the basis of sex, is possible. Direct identification has the advantage of avoiding the possibility of aborting an unaffected fetus or deciding not to transfer unaffected embryos. Despite

the increased ability to identify genes and markers, in certain situations, sex determination is the only current method of identifying embryos or fetuses potentially affected with sex-linked disorders.

Inevitably, identification of sex occurs whenever karyotyping is performed. When medical indications for genetic karyotyping do not require information about sex chromosomes, the prospective parent(s) may elect not to be told the sex of the fetus.

Other reasons sex selection is requested are personal, social, or cultural in nature. For example, the prospective parent(s) may prefer that an only or first-born child be of a certain sex or may desire a balance of sexes in the completed family.

Methods

A variety of techniques are available for sex identification and selection. These include techniques used before fertilization, after fertilization but before embryo transfer, and, most frequently, after implantation.

Prefertilization

Techniques for sex selection before fertilization include timing sexual intercourse and using various methods for separating X-bearing and Y-bearing sperm. No current technique for prefertilization sex selection has been shown to be reliable. Recent attention, however, has focused on flow cytometry separation of X-bearing and Y-bearing spermatozoae as a method of enriching sperm populations for insemination. This technique allows heavier X-bearing sperm to be separated; therefore, selection of females alone may be achieved with increased probability. More research is needed to determine whether any of these techniques can be endorsed in terms of reliability or safety.

Postfertilization and Pretransfer

Assisted reproductive technologies, such as IVF, make possible biopsy of one or more cells from a developing embryo at the cleavage or blastocyst stage. Fluorescence in situ hybridization can be used for analysis of chromosomes and sex selection. Embryos of the undesired sex can be discarded or frozen.

Postimplantation

After implantation of a fertilized egg, karyotyping of fetal cells will provide information about fetal sex. This presents patients with the option of terminating pregnancies for the purpose of sex selection.

Ethical Positions of Other Organizations

Many organizations have issued statements concerning the ethics of health care provider participation in sex selection. The ethics committee of the American Society for Reproductive Medicine maintains that the use of preconception sex
nd markers, in certain situations, sex or identifying embryos or fetuses...

occurs whenever karyotyping is per-

genetic karyotyping do not require

ested are personal, social, or cultural

parent(s) may prefer that an only or

y desire a balance of sexes in the com-

sex identification and selection. These

zation, after fertilization but before

fter implantation.

ilization include timing sexual inter-

separating X-bearing and Y-bearing

ilization sex selection has been shown

t, has focused on flow cytometry separ-

atozoa as a method of enriching sperm

ique allows heavier X-bearing sperm

males alone may be achieved with

ed to determine whether any of

m reliability or safety.

fer

h as IVF, make possible biopsy of one

o at the cleavage or blastocyst stage.

be used for analysis of chromosomes

d sex can be discarded or frozen.

karyotyping of fetal cells will provide

nts patients with the option of termi-

ex selection.

r Organizations

nts concerning the ethics of health care

The ethics committee of the American

ists that the use of preconception sex

selection by preimplantation genetic diagnosis for nonmedical reasons is ethi-

cally problematic and “should be discouraged.” However, it issued a statement

in 2001 that if preimplantation techniques, particularly flow cytometry for

perm sorting, were demonstrated to be safe and efficacious, these techniques

would be ethically permissible for family balancing. Because a preimplanta-

tion genetic diagnosis is physically more burdensome and necessarily involves

the destruction and discarding of embryos, it was not considered similarly

 permissible for family balancing.

The Programme of Action adopted by the United Nations International

Conference on Population and Development opposed the use of sex selec-

techniques for any nonmedical reason. The United Nations urges govern-

ments of all nations “to take necessary measures to prevent . . . prenatal sex

selection.”

The International Federation of Gynecology and Obstetrics rejects sex

selection when it is used as a tool for sex discrimination. It supports precon-

ception sex selection when it is used to avoid sex-linked genetic disorders.

The United Kingdom’s Human Fertilisation and Embryology Authority

Code of Practice on preimplantation genetic diagnosis states that “centres may

not use any information derived from tests on an embryo, or any material

removed from it or from the gametes that produced it, to select embryos of a

particular sex for non-medical reasons.”

Discussion

Medical Testing Not Expressly for the Purpose

of Sex Selection

Health care providers may participate unknowingly in sex selection when

formation about the sex of a fetus results from a medical procedure per-

formed for some other purpose. For example, when a procedure is done

to rule out medical disorders in the fetus, the sex of a fetus may become

known and may be used for sex selection without the health care provider’s

knowledge.

The American College of Obstetricians and Gynecologists’ Committee

on Ethics maintains that when a medical procedure is done for a purpose

other than obtaining information about the sex of a fetus but will reveal

the fetus’s sex, this information should not be withheld from the pregnant

woman who requests it. This is because this information legally and ethically

belongs to the patient. As a consequence, it might be difficult for health care

providers to avoid the possibility of unwittingly participating in sex selec-

tion. To minimize the possibility that they will unknowingly participate in

sex selection, physicians should foster open communication with patients

aimed at clarifying patients’ goals. Although health care providers may not

ethically withhold medical information from patients who request it, they

are not obligated to perform an abortion, or other medical procedure, to

select fetal sex.
Medical Testing Expressly for the Purpose of Sex Selection

With regard to medical procedures performed for the express purpose of selecting the sex of a fetus, the following four potential ethical positions are outlined to facilitate discussion:

Position 1: Never participate in sex selection. Health care providers may never choose to perform medical procedures with the intended purpose of sex selection.

Position 2: Participate in sex selection when medically indicated. Health care providers may choose to perform medical procedures with the intended purpose of preventing sex-linked genetic disorders.

Position 3: Participate in sex selection for medical indications and for the purpose of family balancing. Health care providers may choose to perform medical procedures for sex selection when the patient has at least one child and desires a child of the other sex.

Position 4: Participate in sex selection whenever requested. Health care providers may choose to perform medical procedures for the purpose of sex selection whenever the patient requests such procedures.

The committee shares the concern expressed by the United Nations and the International Federation of Gynecology and Obstetrics that sex selection can be motivated by and reinforce the devaluation of women. The committee supports the ethical principle of equality between the sexes.

The committee rejects, as too restrictive, the position that sex selection techniques are always unethical (position 1). The committee supports, as ethically permissible, the practice of sex selection to prevent serious sex-linked genetic disorders (position 2). However, the increasing availability of testing for specific gene mutations is likely to make selection based on sex alone unnecessary in many of these cases. For example, it supports offering patients using assisted reproductive techniques the option of preimplantation genetic diagnosis for identification of male sex chromosomes if patients are at risk for transmitting Duchenne’s muscular dystrophy. This position is consistent with the stance of equality between the sexes because it does not imply that the sex of a child itself makes that child more or less valuable.

Some argue that sex selection techniques can be ethically justified when used to achieve a “balance” in a family in which all current children are the same sex and a child of the opposite sex is desired (position 3). To achieve this goal, couples may request 1) sperm sorting by flow cytometry to enhance the probability of achieving a pregnancy of a particular sex, although these techniques are considered experimental; 2) transferring only embryos of one sex in assisted reproduction after embryo biopsy and preimplantation genetic diagnosis; 3) reducing, on the basis of sex, the number of fetuses in a multifetal pregnancy; or 4) aborting fetuses that are not of the desired sex. In these situations, individual parents may consistently judge sex selection to be an important personal or family goal and, at the same time, reject the idea that children of one sex are inherently more valuable than children of another sex.


Although this stance is, in principle, consistent with the principle of equality between the sexes, it nonetheless raises ethical concerns. First, it often is impossible to ascertain patients' true motives for requesting sex selection procedures. For example, patients who want to abort female fetuses because they value male offspring more than female offspring would be unlikely to espouse such beliefs openly if they thought this would lead physicians to deny their requests. Second, even when sex selection is requested for nonsexist reasons, the very idea of preferring a child of a particular sex may be interpreted as condoning sexist values and, hence, create a climate in which sex discrimination can more easily flourish. Even preconception techniques of sex selection may encourage such a climate. The use of flow cytometry is experimental, and preliminary reports indicate that achievement of a female fetus is not guaranteed. Misconception about the accuracy of this evolving technology coupled with a strong preference for a child of a particular sex may lead couples to terminate a pregnancy of the "undesired" sex.

The committee concludes that use of sex selection techniques for family balancing violates the norm of equality between the sexes; moreover, this ethical objection arises regardless of the timing of selection (i.e., preconception or postconception) or the stage of development of the embryo or fetus.

The committee rejects the position that sex selection should be performed on demand (position 4) because this position may reflect and encourage sex discrimination. In most societies where sex selection is widely practiced, families prefer male offspring. Although this preference sometimes has an economic rationale, such as the financial support or physical labor male offspring traditionally provide or the financial liability associated with female offspring, it also reflects the belief that males are inherently more valuable than females. Where systematic preferences for a particular sex dominate, there is a need to address underlying inequalities between the sexes.

Summary

The committee has sought to assist physicians and other health care providers facing requests from patients for sex selection by calling attention to relevant ethical considerations, affirming the value of equality between the sexes, and emphasizing that individual health care providers are never ethically required to participate in sex selection. The committee accepts, as ethically permissible, the practice of sex selection to prevent sex-linked genetic disorders. The committee opposes meeting other requests for sex selection, such as the belief that offspring of a certain sex are inherently more valuable. The committee opposes meeting requests for sex selection for personal and family reasons, including family balancing, because of the concern that such requests may ultimately support sexist practices.

Medical techniques intended for other purposes have the potential for being used by patients for sex selection without the health care provider's knowledge or consent. Because a patient is entitled to obtain personal medical information, including information about the sex of her fetus, it will sometimes be impossible for health care professionals to avoid unwitting participation in sex selection.
POSTSCRIPT

Should Parents Be Allowed to Choose the Sex of Their Children?

A primary focus of critics' concern about sex-selection technologies (and cultural biases toward males) is their impact on population sex ratios. A skewed sex ratio, they fear, will cause dire consequences for a society, particularly for heterosexual mating (although it is ironic that the same class of reproductive technological advances not only facilitate sex selection but also make reproduction less reliant on conventional heterosexual mating). But what about social concerns about sex selection? How will the increasing frequency of the use of sex-selection technologies impact families? How will it affect gender assumptions and sex discrimination?

Is the acceptability of sex-selection conditional? If Americans were not as biased toward having just boys or just girls, and therefore the population sex ratio would not be threatened, would sex selection be acceptable to control the birth order of the sexes, to ensure a mixture of boys and girls, or to have an only child of a certain desired sex? Sex-selection technology might reduce overpopulation by helping families who already have a child of one sex “balance” their family with a second child of the other sex, rather than continue to have children “naturally” until they get the sex they want. Is using sex selection as a “small family planning tool” an acceptable use of sex-selection technologies? Many feel that using sex selection to balance a family is not sexist. But others argue that it is sexist because it promotes gender stereotyping, which undermines equality between the sexes.

Some feminists argue that sex selection for any reason, even family-balancing, perpetuates gender roles and thus the devaluation of women. Some people in the disabilities right movement have joined with this perspective, suggesting that if it is permissible to select against female embryos (is sex per se a genetic “abnormality?”), then so it is permissible to select against embryos with genetic abnormalities of all types; and who is to define what is “abnormal”—height, IQ? Then the door is open to increasing discrimination against people with disabilities.

Should abortions solely for the purpose of sex selection be allowed? This is a profound dilemma for many pro-choice feminists for whom a woman’s right to choose an abortion for any reason is opposed to gross sex discrimination in the form of sex-selective abortions (usually of female fetuses). It is interesting to note that when parents choose to abort based on fetal sex in an effort to “balance” their family, sex selection is regarded as more acceptable than when only female fetuses are aborted because of a preference for males. What assumptions about sex and gender underlie this judgment? In these selections, the effects of
Be Allowed to Have Their Children?

about sex-selection technologies (and impact on population sex ratios. A skewed sex distribution for a society, particularly fornic that the same class of reproductive sex selection but also make reproductive sexual mating). But what about all the increasing frequency of the families? How will it affect gender

national? If Americans were not and therefore the population sex ratio can be acceptable to control the boys and girls, or to have an only sex ratio might reduce overpopula-
done sex “balance” their families and continue to have children. But others argue that sex selection as a “small discrimination technologies? Many feel 

reason, even family-embryonization of women. Some view this perspective, sex embryos (is sex to select against to “balance” or to define what is discrimination)

tallowed? This is woman’s right to discrimination in interests to “bal-

Suggested Readings


See also the following organizations’ statements on sex selection:
