

ISLAMIC NORMATIVE STUDY ON THE PRACTICE OF GENDER SELECTION THROUGH IN VITRO REPRODUCTIVE TECHNOLOGY

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Abstract

Nowadays, the field of health, including science and technology, has developed very quickly, which is inseparable from the law. Almost every country has laws governing how doctors should behave towards their patients and research. There are various assisted reproductive technologies available in reproductive healthcare for couples or individuals who are unable to conceive naturally. These technologies include artificial insemination with in vitro fertilization and embryo transfer. The sex of the fetus can be selected through preimplantation genetic diagnosis (PGD) methods. One of the most developed applications of genetic engineering today is sex selection. Is it moral for a person (parent) to intentionally determine the sex of their child? This study conducted qualitative research with normative juridical. The results found that sex selection in IVF (in vitro fertilization) through the Pre-implantation genetic diagnosis method by removing other embryos is not ethically justified, except for medical indications.

Abstrak

Pada zaman sekarang bidang kesehatan, termasuk ilmu pengetahuan dan teknologi, telah berkembang dengan sangat cepat, yang mana semua hal itu tidak bisa dipisahkan dari hukum. Hampir setiap negara memiliki hukum yang mengatur bagaimana dokter harus berperilaku terhadap pasien dan penelitian mereka. Ada berbagai teknologi reproduksi dengan bantuan yang tersedia di pelayanan kesehatan reproduksi untuk pasangan atau individu yang tidak dapat hamil secara alami. Teknologi ini termasuk inseminasi buatan dengan fertilisasi in vitro dan transfer embrio. Jenis kelamin janin dapat dipilih melalui metode preimplantation genetic diagnosis (PGD). Salah satu aplikasi rekayasa genetika yang paling berkembang saat ini adalah pemilihan jenis kelamin. Apakah moral seseorang (orang tua) dengan sengaja menentukan jenis kelamin anaknya? Penelitian ini melakukan penelitian kualitatif dengan yuridis normatif. Hasil penelitian menemukan bahwa pemilihan jenis kelamin pada bayi tabung (in vitro fertilization) melalui metoda Pre-implantation genetic diagnosis dengan menyingkirkan embryo yang lain tidak dibenarkan secara etika, kecuali atas indikasi medis.

INTRDUCTION

From a legal and religious perspective, the status of a child has important consequences. For example, in Islamic law, a legitimate child is a child born from a legal marriage between a husband and wife. The status of lineage, inheritance, and parental responsibility for the child are clearly regulated in sharia. In addition, children are also seen as a mandate from God that must be cared for and educated properly. In reality, many couples who have been married for many years but have not had children, they also feel anxious, Islamic law teaches us not to despair and encourages us to continue to make efforts (efforts) and have faith to achieve the blessings of Allah SWT and Allah has promised that there is a solution to every problem, including difficulties in having offspring.

Basically, natural fertilization occurs in the womb through natural means (sexual intercourse), in accordance with the fitrah that Allah has ordained for humans. However, this natural conception can sometimes be difficult to achieve, for example because the Fallopian tubes that carry the egg to the



womb are damaged or closed, and cannot be opened or treated. Or because the husband's sperm cells are weak or unable to reach the wife's womb to meet the egg, and cannot be overcome by strengthening the sperm cells, or trying to get the sperm cells to the wife's womb to meet the egg there.¹ The presence of a child is an important element of family happiness.

The development of science and technology in medicine, especially in the field of reproduction, has provided alternative solutions for couples who experience infertility problems or difficulties in obtaining offspring naturally. One of the most significant medical breakthroughs in this regard is the *In Vitro Fertilization* (IVF) method. This technology offers new hope for couples who desire offspring, but are unable to conceive naturally due to various medical factors, such as disorders of the reproductive system or infertility experienced by one or both partners. *In Vitro Fertilization* aims to help couples who are unable to produce offspring naturally due to abnormalities in the private parts such as endometriosis, oligospermia, unexplained or even infertility, facing the modern era, IVF is increasingly favored by infertile married couples to get offspring. However, despite its advantages, IVF is opposed by religious and legal circles.² Problems arise when not everyone utilizes this IVF technology in accordance with the level of *dharurat* or *mashlahah*, such as there are people who use IVF technology to choose the gender of the child to be born which is not included in the *dharury*. From these problems, the purpose of writing this paper is to explore the issue of choosing the gender of the child to be born with *In Vitro Fertilization* technology.

METHODS

The research methods used in this study include analysis with the use of secondary data such as articles, books, research reports, and other relevant sources. The data collection is by literature review such as collecting information from the library by reading and processing various materials related to the topic under study. This research is conducted with a normative juridical approach or *library research* with references to the Koran, hadiths and decisions from the MUI fatwa as well as laws relating to legal sources regarding *In Vitro Fertilization* technology or IVF in Islam.

RESULT AND DISCUSSION

RESULT

IVF or *In Vitro Fertilization* Technology

IVF or artificial insemination is the translation of *Artificial Insemination*. In Indonesian people call it artificial fertilization, artificial fertilization, or artificial pregnancy. Nowadays IVF is not a foreign concept to the Indonesian people. IVF is an application of technology in the field of human reproduction. IVF is an attempt to obtain pregnancy by bringing together sperm and ovum cells so that fertilization occurs in a special container that can only be done by medical personnel. Because the fertilization process comes from a container, the community named it *In Vitro Fertilization*.³ Technically, the doctor removes eggs from the woman's ovaries with a device called a laparoscope. The egg is then placed in a small glass bowl and met with sperm from the woman's husband. After fertilization occurs in the glass bowl, the results of the fertilization are put back into the mother's uterus to then experience pregnancy and give birth to a child as usual.⁴

¹ Sufriadi Pulungan, Ahmad Misbakh, and Zainul Musthofa, "Hukum Bayi Tabung Dalam Pandangan Islam," *The Renewal of Islamic Economic Law* 3, no. 1 (2021): 17–24.

² Nasikhin et al., "Teknologi Bayi Tabung Dalam Tinjauan Hukum Islam," *Jurnal Syariah Dan Hukum* 2, no. 1 (2022): 52–66.

³ Ahmad Hasanuddin and Miswan Ansori, "Nasab Bayi Tabung Dalam Perspektif Agama Islam: Tinjauan Hukum," *Jurnal Studi Hukum Islam* 2, no. 1 (2024): 41–51.

⁴ Nasikhin et al., "Teknologi Bayi Tabung Dalam Tinjauan Hukum Islam."

There are many ways to get pregnant and the use of aids in the pregnancy process to plan the gender of the baby you want, nowadays engineering technology is starting to develop and is widely applied in everyday life, including:⁵

1. *In Vitro Fertilization Embryo Transfer (IVFET)*

It is often referred to by lay people as IVF because they assume that all processes are carried out in the tube. However, what actually happens is that the fertilization or fertilization event is in the tube and the next process is transfer or transfer into the womb of the mother or woman. This event starts from taking the mother's ovum or egg from the ovary or ovary and placing it in the tube. Then the sperm is brought together with the egg. The first stage of the meeting will be a zygote. Two or three days later the zygote will become four to eight cells, we often call it the embryo. The final stage is to transfer the embryo transfer into the mother's uterus.

2. *Zygote Intra Fallopian Transfer Procedure (ZIFT)*

It is similar to the IVF event. However, the difference is that in the ZIFT procedure the earliest stage of the ovum and sperm meeting is transferred, while in IVF the later stages are transferred. Another difference is that ZIFT is placed in the fallopian tubes, while IVF is in the uterus. Of course, the technique is more difficult with ZIFT because the tubal organ is smaller and must go through a laparotomy or minor surgery process.

3. *Intra Cytoplasmic Sperm Injection (ICSI)*

A more advanced technique in which sperm (only one sperm) is taken with the help of technology and requires great skill and precision. The single sperm is then injected into the cytoplasm of the ovum or egg. This happens outside the woman's body. After the injection process, the results will be transferred into the woman's body depending on the phase of development. The techniques above are just a few examples of the development of general medical science or reproductive engineering both in the world and in several medical education centers in big cities in Indonesia such as Jakarta, Yogyakarta, Surabaya, Semarang, Bandung, Denpasar, Medan and Makassar. The development of technology is not only about how to get a child and even plan the sex of the child, but there is another technology that is human engineering and is called stem cell therapy. Treatment with stem cells derived from the results of human-engineered reproductive techniques. In animals, the cloned Dolly sheep has been born. Whereas in humans there are still many factors that must be considered both in terms of social, cultural.

The background of IVF is divided into two parts, namely:⁶

1. Male factor:

- a. Disruption of the spermatozoa outflow tract.
- b. Physical paralysis that renders a man incapable of sexual intercourse (e.g., paralysis from the waist down after an accident).
- c. A very limited number of spermatozoa are able to fertilize the egg (those that have a normal spermatozoa body shape and move actively)
- d. Other things that still cannot be explained scientifically.

2. Female Factor:

- a. Disorders of the female reproductive tract (such as adhesions or tubal blockages)
- b. The presence of abnormal antibodies in the female reproductive tract, causing male spermatozoa that enter it to be unable to survive.
- c. Other things that still cannot be explained scientifically.

⁵ Suwignyo Siswosuharjo, *Cara Mudah Merencanakan Jenis Kelamin Anak* (Semarang: Penebar Plus, 2008), 43.

⁶ Wiryawan Permadi, *Hanya 7 Hari Memahami Fertilisasi In Vitro* (Bandung: PT Refika Aditama, 2008), 4.

In medicine, there are also 2 factors that make a person choose IVF because of the inability to fertilize naturally:

1. Weak sperm spray that does not reach the ovaries in the woman's uterus during climax.
2. Difficulties felt by the couple to obtain a child, because the sperm cannot fertilize perfectly, either due to damage to the place or because the power is weak.

One method of IVF program where the wife cannot conceive, but the eggs are still good, then there is one way offered by modern medical technology, namely by fertilizing male sperm cells against female eggs in a tube, which after the union of the zygote, will be implanted or replanted in the uterus of another woman or surrogate mother who has no relationship at all with the source of these cells.⁷ There are several techniques used in artificial insemination in humans (IVF) that have developed in the world of medicine at this time, among others:⁸

1. fertilization in Vitro (FIV) by taking the husband's sperm and the wife's ovum then processed in vitro (tube) and then if fertilization has occurred then transferred to the wife's uterus
2. *Gamet Intra Felopian Tuba (GIFT)* by taking the husband's sperm and the wife's ovum and after mixed fertilization occurs, it is immediately planted in the egg channel (*Tuba palupi*).

The success of IVF is certainly supported by technology that is increasingly sophisticated and advanced thanks to human intelligence, including the following:⁹

1. *Intracytoplasmic Sperm Injection (ICSI)*
ICSI is a sperm selection procedure performed by an embryologist under a high-powered microscope with 400 times magnification. With the ICSI technique, the sperm is injected into the egg resulting in fertilization. This technique is used when sperm quality is low or poor.
2. *Intracytoplasmic Morphologically Selected Sperm Injection (IMSI)*
IMSI is a technology developed from ICSI that aims to select sperm in detail using a microscope with a magnification of up to 6000 times. This technique allows the embryologist to see the sperm in more detail, so that the selected sperm has a morphology of.
3. *Preimplantation Genetic Testing (PGT)*
PGT is a technique to check the genetic material of the embryo before implantation. This technology is done to determine the chromosomes of the embryo.
4. *Embryo Freezing*
Embryo freezing can be done for couples who plan to have a baby in the future. Unlike egg freezing, embryo freezing requires sperm fertilization, which is then stored in liquid nitrogen at minus 196 degrees Celsius.
5. *Laser Assisted Hatching (LAH)*
LAH is a laser technique used to thin the cell walls of the embryo to make it easier to attach to the uterine wall. To get the best results, this technique is performed while the embryo is implanted in the uterus.

IVF is a process where a woman's egg and a man's sperm are taken to undergo fertilization. The process of fertilization of sperm with ovum is brought together outside the womb in a specially designed tube. After fertilization, the zygote is then inserted into the uterus until it is born. Fertile

⁷ Desriza Ratman, *Surrogate Mother Dalam Perspektif Etika Dan Hukum: Bolehka Sewa Rahim Di Indonesia?* (Jakarta: PT Elex Media Komputindo, 2021), 2.

⁸ Latifah et al., "Hukum Bayi Tabung Dalam Agama Islam," *Jurnal Hukum Dan Sosial* 1, no. 1 (2023): 121–26.

⁹ Rajudin and Ali Baziad, "Etik, Hukum Dan Sosial Pada Penanganan Infertilitas," *Jurnal Kedokteran Dan Kesehatan Malikussaleh*, 2018, <https://doi.org/10.29103/averrous.v3i1.435>.

couples who do not have children due to abnormalities in the reproductive organs of children in women. Egg retrieval is done in two ways, namely:¹⁰

1. First method: The ovaries are held with tweezers and the follicular fluid containing the eggs is suctioned and examined under a microscope to find the eggs..
2. Second method: (ultrasound) the follicle that appears on the screen is pierced with a needle through the vagina and then suction of the follicle containing the egg is performed like laparoscopic suction.

The Law of IVF or In Vitro Fertilization Technology

Since its emergence, IVF technology has sparked differences of opinion in various circles, including among scholars. In Islam, views on IVF continue to evolve in line with the development of science and technology. Children born as a result of IVF are legal, as long as the sperm and egg are taken from the couple themselves. The ruling is permissible, and legally, they are the legitimate offspring of the parents who did the IVF. So they have the same rights and obligations as children born from natural processes.¹¹ Islam strongly welcomes technological advances that enable humans to have children. In addition, this religion encourages its people to continue to study various kinds of science so that nature can be taken care of properly.

Regarding IVF or *In Vitro Fertilization* Technology is a contemporary problem because this problem has not been found at the time of the prophet and there is no specific law in the Qur'an and sunnah even classical fiqh studies, therefore if it is to be seen from the perspective of Islamic law, it must be by the method of *ijtihad* which is usually used by *mujtahids*, so that conclusions can be obtained.

For a truly proportional law, experts in medicine, biology, law, religion and relevant parties must use multidisciplinary science.

In terms of the Health Law regarding the provision of reproductive health, Law No. 36 of 2009 on health regulates pregnancy outside the natural way (artificial reproduction) for those who have difficulties in reproducing. Regarding this matter, it is further regulated in Article 127 paragraphs (1) and (2) of the 2009 Health Law which states that "Efforts to conceive outside of natural means can only be carried out by a legal married couple" with the following provisions:¹²

- 1) The result of the fertilization of the sperm and ovum of the husband and wife concerned is implanted in the womb of the wife from which the ovum comes.
- 2) Performed by a health worker who has the expertise and authority to do so.
- 3) In certain health care facilities.

Then Decree of the Minister of Health No. 72/Menkes/II/1999 concerning the implementation of artificial reproductive technology, which contains: general provisions, licensing, guidance, and supervision, transitional provisions and closing provisions.

Article 58 of Law Number 17 of 2023 concerning Health, there are rules governing IVF which reads:¹³

"Assisted reproduction can only be performed by a legally married couple under the following conditions:

¹⁰ Anindya Nurvianti Rahima et al., "Hukum Bayi Tabung Dalam Pandangan Islam," *Jurnal Religion: Jurnal Agama, Sosial, Dan Budaya* 1, no. 6 (2023): 92–106.

¹¹ Yayat Rahmat Hidayat and Maman Surahman, "Analisis Pencapaian Tujuan Bank Syariah Sesuai Uu No 21 Tahun 2008," *Amwaluna: Jurnal Ekonomi Dan Keuangan Syariah* 1 (2017): 34–50.

¹² Nasikhin et al., "Teknologi Bayi Tabung Dalam Tinjauan Hukum Islam."

¹³ Undang-Undang Nomor 36 Tahun 2009 tentang Kesehatan

- 1) The result of fertilization of sperm and ovum from the husband and wife concerned is implanted in the womb of the wife from which the ovum originated
- 2) Performed by medical personnel who have the expertise and authority
- 3) Performed at certain health care facilities

So, according to Article 58 of Law Number 17 of 2023 concerning Health, it can be interpreted that pregnancy through IVF must be with: a) sperm and ovum must belong to a legal husband and wife. b) the fertilization must be implanted back into the womb of the wife from which the ovum came. c) carried out by medical personnel who are competent in their fields. d) must be done in adequate health facilities.

Thus, the child or baby resulting from fertilization through IVF as stated in Article 58 of Law Number 17 of 2023 concerning Health is the biological child of the husband and wife themselves. Similarly, the rights of children apply as legitimate children in general and the inheritance law that applies to children resulting from IVF is carried out in accordance with statutory regulations, as well as the inheritance law that applies to biological children.¹⁴

The Indonesian Ulema Council issued:

1. IVF with sperm and ovum from a legitimate married couple is permissible, because this right is an endeavor based on religious principles.
2. IVF from a married couple with the womb of another wife (for example, from the second wife deposited with the first wife) is prohibited based on the principle of *Sadd az-zari'ah*, because this will cause complicated problems in relation to inheritance issues (especially between children born to the mother who has the ovum and the mother who conceived and then gave birth to it, and vice versa).
3. IVF from frozen sperm from a deceased husband is prohibited based on the rules of *Sadd az-zari'ah*, because this will cause complicated problems, both in relation to determining *nasab* and in relation to inheritance.
4. IVF in which the sperm and ovum are taken from someone other than the legitimate husband and wife is forbidden, because it has the same status as sex between members of the opposite sex outside a legal marriage (*zina*), and based on the principle of *Sadd az-zari'ah*, which is to avoid the actual act of *zina*.

DISCUSSION

Rapid developments in the field of reproductive technology have allowed humans to have greater control over the reproductive process. One example is IVF technology which allows infertile couples to have children. Along with its development, this technology also allows couples to choose the gender of their baby.

To make it easier to understand the substance of the contemporary social problem discussed, a brief sketch of the picture is: (1) The name of the contemporary problem is genetic (fetal) engineering to limit or determine the sex of a child. (2) The substance is related to *al-ahwâl al-Syakhshiyyah (al-nikâh, al-nasl)*. (3) The description of the form is that the doctor handles it at the request of the husband and wife through the process of fetal engineering after carrying out the IVF process. (4) The history of the first occurrence in 1993, after geneticists successfully handled the IVF problem in 1987, which was an embodiment of the results of early research on genetics in 1952. (5) The place where it first occurred in the Western world, the United States. (6) The reason it happened in the Western world was because couples wanted sons more than daughters.¹⁵

¹⁴ Herdy Mulyana, "Pertentangan Bayi Tabung Berdasarkan Filsafat, Hukum Dan Hukum Islam," *Jurnal Penelitian Hukum Galunggung* 1, no. 2 (2024): 93–114.

¹⁵ Muh. Said HM, "Rekayasa Penentuan Jenis Kelamin Dalam Kandungan Menurut Hukum Islam," *Abkam* 17, no. 2 (2014).

As we know, the beginning of the formation of a fetus in the womb is when the man's semen (spermatozoa) meets the woman's egg in the fallopian tubes leading to the uterus until the fertilization process of the egg and semen becomes perfect. Then, the fusion of the egg continues to swim in the uterus until it attaches itself to the wall of the uterus, and remains there until the cell (*nutfah*) turns into an embryo (*'alaqah*) and so on.¹⁶ In gender determination, sperm cells containing X or Y chromosomes cannot be directed 100% to meet with the egg. As a result, Allah is the final arbiter. Humans cannot determine exactly which sperm are captured by the uterus, which are not, because there are so many sperm cells diving in the uterus that are invisible, thus humans clearly cannot know anything about it, let alone clamp sperm cells with X or Y chromosomes that are reduced or dropped by the uterus, until God's will occurs.

Pre-implantation genetic diagnosis (PGD) or Pre-implantation genetic screening (PGS) emerged and was developed to determine the genetic profile of the embryo so that selection can be made before implantation. This technique is often aimed at avoiding birth defects of at-risk parents in IVF (*in vitro fertilization*). PGD can determine the sex of the embryo even before implantation. A 2006 survey found that 42 percent of clinics offering PGD had provided sex selection for non-medical reasons. Nearly half did so only to "balance the sex of the family", i.e. if a couple with two or more children of one sex wanted a child of the other sex.¹⁷ Sex-selection is one form of application of genetic engineering technology that is developing quite rapidly today.

In its original function, *Pre-implantation genetic diagnosis* (PGD) or *Pre-implantation genetic screening* (PGS) was a useful tool to help the birth of babies who did not have congenital defects bound to the Y chromosome. By replacing the Y chromosome with an X chromosome, the Y chromosome resulted in baby girls who did not have the possibility of congenital defects. The desire to improve human welfare is the basis of genetic engineering, including sex selection. However, ethical problems arise when the principle of interest begins to invade genetic engineering technology. PGD, which was originally intended to select embryos in order to reduce the birth of unhealthy or disabled children, over time has been utilized merely to select the sex of the child to be conceived and born, which is no longer a matter of *dharuriyat*.

PGD (*Pre-implantation Genetic Diagnosis*) is a genetic screening technique for embryos that will be implanted in *in vitro fertilization* (IVF) reproductive technology. Sperm and eggs are mixed *in vitro* (outside the mother's body). In PGD, the IVF technique is *intracytoplasmic sperm injection* (ICSI), where a single sperm is taken and injected into the egg until it becomes an embryo. The embryo obtained will be developed in the laboratory for three days into eight cells. At this stage, the embryo has the potential to develop into several body tissues known as totipotent. One or two of these cells are then taken for an *in vitro* sample called an *embryo biopsy*. The embryo biopsy cells can be examined by two methods, namely *Polymer Chain Reaction* (PCR) and *Fluorescence In Situ Hybridization* (FISH) methods. If the genetic abnormality is related to a single DNA, *Polymer Chain Reaction* PCR screening is performed. Meanwhile, if the abnormality is related to chromosomal abnormalities or to determine the sex (Y chromosome) of the embryo, the *Fluorescence In Situ Hybridization* FISH method is used.¹⁸

Some of the purposes of PGD in addition to knowing and determining the sex of the fetus include:¹⁹

1. Monogenic Disorder

¹⁶ Adil Yusuf Al-Izazy, *Fiqih Kehamilan* (Pasuruan: Hilal Pustaka, n.d.). 119

¹⁷ Rani Tiyas Budiyaniti, "Aspek Etika Pre-Implantation Genetic Diagnosis (PGD) Pada Teknologi Bayi Tabung," *Cermin Dunia Kedokteran* 42, no. 7 (2015).

¹⁸ Budi Santoso, "Aspek Etik Pemilihan Jenis Kelamin Dalam Proses Pre-Implantation Genetic Diagnosis Pada Rekayasa Reproduksi In Vitro Fertilization," *Aktualita* 2, no. 2 (2019): 473–87.

¹⁹ Budiyaniti, "Aspek Etika Pre-Implantation Genetic Diagnosis (PGD) Pada Teknologi Bayi Tabung."

Currently, PGD is widely used for monogenic disorders, which are chromosomal disorders due to a single gene (autosomal recessive, autosomal dominant or X-linked). PGD will identify embryos carrying genetic diseases or chromosomal abnormalities, in order to avoid the birth of sick children. The most commonly diagnosed autosomal recessive disorders are cystic fibrosis, thalassemia beta, sickle cell disease and spinal muscular atrophy type 1. The most common autosomal dominant diseases are myotonia dystrophy, Huntington's disease and Charcot-Marie-Tooth disease, while cases associated with the X chromosome are hemophilia A and Duchenne muscular dystrophy. PGD is also now being performed for hereditary multiple exostoses (MHE/MO/HME). In addition, there are couples carrying recessive genes for diseases who opt for PGD as it can be easily combined with IVF treatment.

2. Determination of Chance of Pregnancy

PGD has been suggested as a method to determine the quality of in vitro fertilized embryos, to select embryos that appear to have the greatest chance of a successful pregnancy. However, since it depends on single cell assessment, PGD has limitations as it is random which may not be representative of the embryo.

3. Savior Siblings

Savior siblings are children who are intentionally born to provide organ or tissue donors to be transplanted to older siblings suffering from diseases such as thalassemia- β or Fanconi anemia. In transplantation, human leucocyte antigen (HLA) compatibility between donor and recipient is important. HLA can already be known since it is still in embryonic form. PGD can select embryos that have the same HLA as the recipient and are free from genetic diseases and will then be implanted in the uterus in the IVF process. The best transplantation done is with hematopoietic stem cell transplantation obtained from the umbilical cord of the recipient's fetus.

Since hundreds of years before Christ, society has had a culture of selecting children of a certain gender; choosing boys more often than girls. The development of genetics and reproductive technology expands a person's options to determine the desired quality of their offspring. The choice is not only about screening for the possibility of hereditary diseases but also about selecting the desired gender of the child.²⁰ PGD technology can determine the gender and potential related diseases (X-linked disorders), leading to frequent requests to change the gender so that the embryo does not contract the disease. According to FIGO, sex selection to avoid hereditary diseases is permitted.

The problem arises when parents request a child of a certain gender for family balancing. In 2000 in Italy, Alan and Louise Masterton applied to the HFEA (Human Fertilisation and Embryology Authority) for permission to perform PGD in order to have a baby girl after the death of their daughter in an accident. The couple has four sons, and Mrs. Masterton underwent sterilization after her fifth pregnancy. HFEA allowed it, but it turned out that the three embryos used failed. In England, the use of PGD for family balancing is prohibited by law. In China and India, this selection of gender is potentially tradeable considering that in both countries, parents often prefer male children. In Indonesia, there are no regulations governing that matter yet.²¹

Preimplantation genetic diagnosis (PGD) technology can be used to select the sex of the fetus, to determine sex selection in IVF (in vitro fertilization) using the preimplantation genetic diagnosis method in in vitro reproductive techniques. Fertilization by discarding other embryos is not ethically justified, except for medical activities. In many countries (especially in the West), sex determination often leads to unwanted abortions without considering the right to life of the developing fetus. This is a sensitive, concerning, and worrisome issue.

²⁰ M. Jusuf Hanafiah and Amri Amir, *Etika Kedokteran & Hukum Kesehatan* (Jakarta: EGC, 2017), 141.

²¹ Budiyantri, "Aspek Etika Pre-Implantation Genetic Diagnosis (PGD) Pada Teknologi Bayi Tabung."

Therefore, humans can act less humanely because of technology. The effort to determine the sex of a child is actually a continuation of the artificial insemination process or in vitro fertilization, using genetic engineering in the womb to determine or even limit the desired male or female sex of the couple through advancements in medical science and technology.

CONCLUSION

The rapid advancement and development in science and technology, especially in the field of medical technology, can lead to the emergence of new fiqh issues in Islamic society. The test-tube baby falls under contemporary fiqh, where scholars need to exercise ijtihad in determining its ruling, considering various aspects.

Legally, babies produced through in vitro fertilization technology have two conditions: it is allowed provided that the sperm taken is from the legitimate husband and wife, and implanted in the wife's womb (not another woman's womb), and it is not allowed if the sperm taken is from another man or if implanted in another woman's womb. With the advancement of technology, people sometimes lose themselves and cross boundaries, so humans must be able to use technology appropriately. By utilizing PGD (Pre-implantation Genetic Diagnosis) technology, it is possible to determine the gender and potential associated diseases (X-linked disorders), leading to frequent requests to change the gender so that the embryo does not contract the disease. According to FIGO, sex selection to avoid hereditary diseases is permissible. The effort to determine the sex of a child is actually a continuation of the artificial insemination process or in vitro fertilization, using genetic engineering in the womb to determine or even limit the desired male or female sex of the child through advancements in medical science and technology. However, in Indonesia, there is no law that specifically addresses sex selection in this PGD technology.

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