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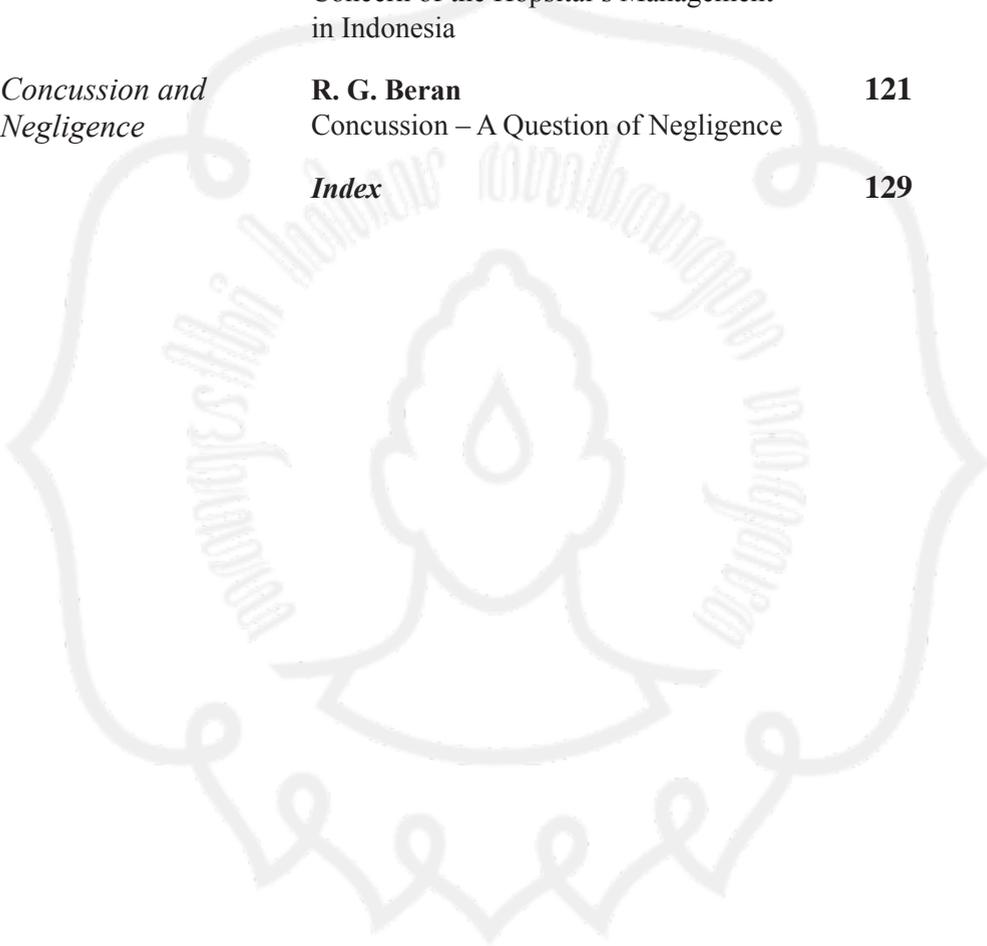


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Genetics and Gene Manipulation

**SEX SELECTION USING ASSISTED REPRODUCTIVE
TECHNOLOGY: AN ISLAMIC LAW PERSPECTIVE**

Pujiyono*, Sufmi Dasco Ahmad and Rani Tiyas Budiyaniti***

Abstract: Reproductive technology has helped address the problem of infertility. Over time, it has been used to select the sex of the foetus. Foetal sex selection may have medical and non-medical reasons. Non-medical and societal reasons for sex selection include cultural preferences for a certain sex and family planning. Medical reasons for sex selection include the avoidance of sex-linked diseases. Islamic law allows medically aided sex selection in the case of serious sex-linked diseases, such as Duchene muscular dystrophy and haemophilia. By contrast, medically aided sex selection for non-medical reasons is prohibited. Sex selection through natural methods, such as diet, the timing of sexual intercourse and the use of chemicals, is allowed.

Keywords: Sex Selection; Assisted Reproductive Technology; Islamic Law

A. INTRODUCTION

The development of reproductive technology has helped overcome the problem of infertility. Al Qur'an, a guide for Muslims, emphasises the importance of marriage with the goal of rearing children. As listed in Q.S. *An-Nahl* paragraph 72:

'Allah makes for you wives of this kind of your own and makes you from the wives of you. The children and the grandchild. Then why they faithful to the batil and go back favours Allah?'

The problem of infertility is presented in Al Qur'an, *Adz-Dzariyat* paragraphs 28–30 through the story of the prophet Ibrahim and his wife Sarah, who was

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barren until she finally gave birth to a boy named Ishaq. The story of the prophet Zakaria, who pleaded with God for children, is related in Al Qur'an, *Al-Anbiya'* paragraphs 89–90.

Islamic law prohibits adoption because it is considered *nasab*, although caring for adoptive children is considered good attitude. Infertile Muslims are advised to seek infertility treatments¹.

Islamic law allows married partners to use assisted reproductive technology (ART). However, the sperm and the egg must come from the spouses involved. ART has been discussed by Dar el Iftaa, Kairo in the 1980s and Fatwa Islamic Fiqh Council Makkah (1984), Islamic Organization for Medical Sciences in Kuwait (1983), Fatwa OiC-IFA 1986 and International Islamic Centre for Population Studies and Research (IICSPR), and Al Azhar University². Over time, ART has been used, not only to overcome the problem of infertility, but also to select the sex of the foetus. The practice of non-medical or social sex selection has flourished: Approximately 50%–70% of parents practice sex selection during pregnancy³.

Technological developments, such as Medical ultrasonography, chromosomal analysis and amniocentesis, have allowed the identification of sex of the foetus before birth. The population of countries in which sex selection is common, such as China and India, have a high male-to-female ratio⁴.

Some people still assume that a man is more likely than a woman to carry his family name, take care of his parents when they are elderly, and act as the backbone of the family and as a religious leader.

Discrimination against the female sex not only occurs in China and India but also in Saudi Arabia, the centre of Islamic development. Abortion and murder of female foetuses and infants were more prevalent in Saudi Arabia 1400 years ago prior to the development of Islam⁵. Q.S *Asy-Syura* paragraph 49 reads:

1 Younis H, Islam and bioethics. *Obstetrics & Gynaecology magazine*, ethics and religion section 10, (2008), 24-26

2 Sultan HA, Haper JC, Legalization and Islamic Bioethical Perspectives on Prenatal Diagnosis and Advanced Uses of Preimplantation Genetic Diagnosis in Saudi Arabia. *J Clinic Resh Bioeths*, (2012)

3 Chamsi-Pasha H, Albar MA. Assisted reproductive technology: Islamic Sunni perspective, (*Human Fertility*, 2015), 4

4 Katz NS, Abortion in India: Selecting by Sex, WASH. (2006) at B09. <http://www.washingtonpost.com/wpdyn/content/article/2006/05/19/AR2006051901219.html>

5 Op cit

'Allah created what he wanted. He gave the girls to whom he wanted and gave the boys to whom he wanted'.

Sex selection is also performed for medical reasons, specifically to avoid X-linked diseases like Duchene muscular dystrophy (DMD), haemophilia, and fragile X-syndrome⁶.

B. SEX SELECTION THROUGH ART

Sex is determined by the number of X and Y chromosomes. Boys have one copy each of the X and Y (XY) chromosomes, whereas girls have two copies of the X chromosome (XX). Each copy of a chromosome is obtained from the paternal sperm and maternal egg. Sex selection can be conducted pre-implantation and in vitro. Pre-implantation sex selection methods include sperm sorting, and in vitro sex selection methods include pre-implantation genetic diagnosis (PGD)⁷.

Sperm sorting operates on the principle that each sperm cell may carry either the X or Y chromosome. Laser beams are used to separate sperm cells carrying the X chromosome from those carrying the Y chromosome. Under fluorescence, sperm cells carrying the X chromosome will appear brighter and thicker because the X chromosome contains 2.8% more DNA than the Y chromosome⁸. In addition to the use of fluorescence, sperm can be sorted through albumin gradients⁹. After identification, the sperm cells carrying the desired sex chromosome are collected using an automatic machine. Sperm cells carrying the X chromosome are collected if girls are desired. Sperm cells carrying the Y chromosome are collected if boys are desired. The collected sperm cells are then united with egg cells through IVF or artificial insemination. Sex selection through sperm sorting has a success rate of 75%–80% for a baby boy and 70%–73% for a baby girl¹⁰.

PGD involves the in vitro screening of embryos prior to implantation and intracytoplasmic sperm injection. A single sperm is taken and injected into an egg. The fertilised egg is then allowed to develop into an embryo under laboratory

6 Rodini, MA, An investigation on Islamic perspective on the reproductive technologies. Webmed Centra Reproduction : 3, (2012), 7

7 Rajani Bhatia et al, Sex Selection: New Technologies, New Forms of Sex Discrimination. Center for Genetics and Society, (2003)

8 Rachel Remaley, 'The Original Sexist Sin': Regulating Preconception Sex Selection Technology Health Matrix, (The Journal of Law- Medicine, 2000), Volume 10, 2

9 Dmowski WP, et al, Use of albumin gradients for X and Y sperm separation and clinical experience with male sex preselection. (Fertil Steril, 1979)

10 Island Reproductive Series. <http://www.ivfny.org/family-balancing>

conditions for up to three days until the eight-cell stage. At this stage, embryonic cells are totipotent and have the potential to differentiate into various bodily tissues. One or two of the embryonic cells are sampled in vitro, through embryo biopsy¹¹. The DNA and chromosome obtained through embryo biopsies are analysed and identified. The embryo with the desired sex and genetic characteristics are then implanted. This sex selection technology is highly promising with success rates approaching 100%. This technology also can be used to screen for genetically healthy embryos for implantation but it is more expensive than sperm sorting.

C. ISLAMIC LAW PERSPECTIVE

Islamic law has primary and secondary sources. The primary source of Islamic law consists of Al-Qur'an, which is the revelation of Allah *Subhaanahu wata'ala*, and Al Hadist or Sunnah, or the words of the prophet Muhammad. The main source of Islamic law cannot be interpreted or explained clearly. Thus, logical reasoning, or the *ijtihad* of judgement, is required to explain the primary sources of Islamic law for adoption, in accordance with needs and conditions.

A secondary source of Islam law exists, consisting of *ijma'* (the deal of theologians), *qiyas* (analogy), *istihsan*, *maslahah*, *mursalah*, *istishab*, and *urf* (customs)¹²

The legitimacy of sex selection through ART is not clearly or explicitly stated in Al-Qur'an and Al Hadist, although some sections of these sources are related to the topic. The *ijtihad* of judgement with the secondary source of Islamic law is required to determine the validity of sex selection within the context of Islam.

Al-Qur'an states that the sex of the child in the womb is the will of Allah. As mentioned in Q.S. *Al-imran*, paragraph 6:

'Allah formed you in the womb as desired. There is no god (entitled to be worshipped) but He the courageous again the wise'.

Allah constructed the whole of genes that determine sex and physical and personality traits, like talent, intelligence, and mental characteristics. Determination of the form of a human from the meeting of eggs and sperm cells from millions of other

11 P Braude, et al, Preimplantation Genetic Diagnosis. Nature Review Volume, (2002) <https://www.nature.com/scitable/content/Preimplantation-Genetic-Diagnosis-16213>

12 Puteri Nemie Jahn Kassim, Law and Ethics Relating to Medical Profession in International Law Book Service, (2007)

cells is a evidence of the will of the absolute God; thus, every individual in the world is unique¹³.

The topic of sex determination is also mentioned in some surah in Quran, among others *Luqman* paragraph 34, *Ar-Ra'd* paragraph 8, and *Asy-Syura* paragraph 49. Hadith also states that sex selection is the will of God. Mentioned in Hadith History (HH) of Muslim number 473 :

'He said, I came up with a question about the child. He replied, the seed of a man is white and that of a woman is yellow. If they are united and the seed of the man is dominant over that of the woman, then the foetus will be male with the permission of Allah. If the seed of the woman is dominant over that of the man, the foetus will be a female with the permission of Allah'

In addition to the discussion presented in HH Muslim number 4783 reads:

'Hudzaifah said to Amir, if you still feel surprised to hear this question? Actually, I have heard Rasulullah Shalallahu 'alaihi wassalam says: when nuthfah (cum) has the 42 night, then Allah will send angels to go to one of these nuthfah (cum). Then Allah would make up his body, creating ears, creating eyes, the skin, the flesh and the bones. After that, an angel is going to ask: Oh my God, is the foetus in the womb male or female?'

Al-Qur'an and Al Hadith mention that the sex of the child is the will of God. An international consortium, on bioethics in human reproduction research in the Muslim world, met in Cairo on October 10–13 December 1991 and was attended by approximately 200 participants, including doctors, Muslim scholars and theological experts. The consortium declared that *'...sex selection is however permitted if a particular sex is predisposed to a serious genetic condition..'*¹⁴

This opinion is similarly expressed by the Islamic Fiqh Council held in Makkah (November 2007) that discussed fatwa and technological development, including the use of ART for sex selection. Fatwa at the conference was mentioned because sex selection for social reasons is banned¹⁵. Sex selection is allowed only in the

13 www.tafsirq.com

14 Serour GI, Omran AR, Barzelato J, Ethical guidelines for human reproduction research in the Muslim world : based on highlights, papers, discussions, and recommendations of the First International Conference on Bioethics in Human Reproduction Research in the Muslim World, (Cairo 10-13th December, 1991. Cairo : International Islamic Center for Population Studies and Research, Al-Azhar University, 1992, p. 30-1)

15 'Resolution of Islamic Fiqh Council 19th Session Makkah Mukarramah' in Islamic Fatwa Council, (Makkah, 2007)

cases of serious medical conditions. The Council recommended that sex selection be done naturally through controlling diet, chemical use and the timing and position of sexual intercourse. Medical interventions for sex selection, in the case of sex-linked diseases, is allowed and should be discussed by a panel of specialists with at least three members.

Sex selection for serious medical reasons is considered as *daruriyat* (a state of emergency) due to their hereditary patterns and their potential impacts on future descendants. Decision-making in a state of emergency is based on six principles. First, normally banned decisions can be allowed in a state of emergency when no alternative is available. Second, the decision must be made to keep and preserve life. Third, the decision is made on the belief that the benefits/advantages outweighs the disadvantages. Fourth, the chances of success should be considered. Fifth, the decision is made after considering its advantages, losses, benefits, and disadvantages and sixth, the decision is made because no alternative exists.

Sex selection is allowed in the cases of sex-linked diseases such as DMD, an X-linked disease. DMD is the most common kind of muscular dystrophy among boys. Patients generally experience muscular weakness and ultimately become paralysed. Patients with DMD cannot sit up or squat by themselves. The form of the body changes, with the hips prominently angling forward and the back and shoulders curving back. They become wheelchair-bound by the age of 10–12 years and have an average age of survival of 19 years. No effective therapy for DMD exists¹⁶ although there are being developed some techniques to modify the severity of its expression.

The risk of developing DMD can be considered an emergency. In this case, sex selection is allowed because it is associated with the survival of the child. The chances of success and benefits obtained exceed the disadvantages of sex selection. *Hifz al-sihhah wa daf al-marad* (keeping themselves from the disease) is an important matter to consider because living a normal life is difficult without a healthy body.

The condition of *daruriyat*, in the case of DMD, is different from that in the case of colour blindness. Although both medical conditions are sex-linked, colour blindness is not *daruriyat* because individuals with colour blindness can still live normal lives. Thus, sex selection in cases of colour blindness should not be allowed.

16 Busbhy K, et a, Diagnosis and management of Duchenne muscular dystrophy, part 1: diagnosis, and pharmacological and psychosocial management, (2009)

Sex selection for non-medical reasons is not an emergency and is thus prohibited. Its potential disadvantages may outweigh the obtained benefit. For example, sex discrimination and sex ratio imbalance can result from non-medical sex selection. Sex selection, through ART, is considered as intervening with the will of God.

D. CONCLUSION

In summary, Islamic scriptures and beliefs describe Allah as the one who determines the sex of the child. Allah, through the Religion, gives an opportunity for humans to choose the sex of the child with various restrictions. Selection of the sex of the child can be done with the help of technology, such as ART. From the perspective of Islamic law, sex selection, through ART, for serious medical reasons is allowed under the condition of *daruriyat*. Sex selection through ART for non-medical reasons is prohibited. Sex selection through natural methods, such as diet, timing and positions of intercourse, and chemical use is allowed.

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