



Ethical Issues in Sperm, Egg and Embryo Donation: Islamic Shia Perspectives

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Abstract

Assisted Reproductive Technologies (ARTs) have been practiced in Islamic societies within married couples since their introduction. However, there are divergent views over the issue of third-party donation among Sunni and Shia scholars. This paper illustrates the different perspectives of Shia Muslims surrounding, sperm, egg, and embryo donation and ethical aspects thereof. The study reveals that there are different views regarding sperm, egg, and embryo donation among the Shia religious leaders around the world. Many Shia religious scholars, including the Iranian supreme religious leader Ali Hussein Khamenei allow sperm, egg, and embryo donation with certain conditions. However, the conditions stipulated by Shia religious scholars contradict the ethical and legal practices of sperm, egg, and embryo donation. Regarding sperm and egg donation, they declared that the donor child would inherit from a third-party donor and the commissioning parents would be adoptive parents. Thus, according to them, donor anonymity is impossible. Moreover, the Iranian act on embryo donation did not stipulate the right and responsibilities of the donor child and recipient couples and did not clarify the nature and number of embryos that can be donated and implanted. The paper argues that the lack of laws and guidelines on sperm, egg, and embryo donation raises many ethical problems. Based only on religious rulings, third-party donation has been practiced without foreseeing the well-being and safety of donor children, donors, and recipient couples.

Keywords Gamete donation · Sperm donation · Egg donation · Shia Islam · ARTs · Islamic bioethics

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Introduction

Assisted Reproduction Technologies (ARTs) have been practiced in most Muslim countries, as Islam considers infertility a disease and the treatment of any disease is strongly encouraged. However, in most Muslim countries, ARTs have been practiced as per Islamic religious rulings (*fatwas*). After the birth of the first IVF baby, many authoritative religious rulings were issued on ARTs by Islamic scholars and religious organizations belonging to Shia and Sunni Islam. However, all forms of ARTs are not well accepted in the Muslim world. Some of the practices of ARTs raise questions and concerns in many Muslim societies. One of the major areas of controversy and rejection is third-party donation as third-party donation gives birth to a new idea of kinship, which includes biological, medical, legal, ethical, and religious aspects (Chien, 2020; Inhorn & Tremayne, 2016; Larijani & Zahedi, 2007). Since 1980, Sunni countries have upheld the Al-Azhar *fatwa* prohibiting all forms of third-party reproduction. Shia clerics, on the other hand, have been more permissive on the subject, allowing the use of donor gametes in reproduction (Gürtin et al., 2015; Inhorn et al., 2017; Saniei & Kargar, 2021). This paper analyzes the positions of Shia Muslims on sperm, egg, and embryo donation and examines ethical issues that arise from such practices.

Many studies were carried out on the practices of ARTs in the Muslim world, particularly in Shia societies, where third-party assisted reproduction is legal under specific circumstances. Anthropologists Morgan Clark and Marcia Inhorn have conducted major works on Muslim attitudes toward ARTs. Inhorn et al. (2017) analyzed the usage of ARTs in four Middle Eastern countries: Egypt, Jordan, and Saudi Arabia, which are Sunni majority Arab countries; Turkey, which is a Sunni but officially “secular” nation; Shia Iran; and Jewish Israel. While several Middle Eastern countries support ARTs, their attitudes toward third-party donation differ. Iran and Israel allow it, while the others prohibit it. Clarke (2007, 2008) conducted research in Lebanon and discovered that many infertility treatment centers are not controlled by legislation, making sperm and egg donation readily available. However, data from Lebanon (Inhorn, 2011) reveals that sperm donation remains controversial, whereas egg donation is gradually becoming accepted. Tremayne and Akhondi (2016) looked into fertility treatments in Iran in the context of the country’s pronatalist plans, which were aimed to boost population growth.

Many studies (Bokek-Cohen et al., 2021; Chien, 2020; Clarke, 2007; Gürtin et al., 2015; Inhorn & Tremayne, 2016; Khan & Konje, 2019; Kooli, 2020; Larijani & Zahedi, 2007; Tremayne & Akhondi, 2016) noted that even within the Shia community, however, there is some controversy about the ethics of gamete donation, resulting in a diversity of opinion and practices. Many investigations have found that even among Shia scholars both inside and outside Iran, Ayatollah Khamenei’s *fatwa* did not obtain majority approval. There is still much disagreement among Shia scholars about the validity of gamete donation, notably sperm and embryo donation. Despite the Khamenei’s *fatwa*, many Shia religious scholars continue to follow the Sunni Muslim view that third-party donation is

prohibited (Abbasi-Shavazi et al., 2008; Afshar & Bagheri, 2013; Bou Assi et al., 2019; Clarke, 2007; Inhorn, 2011). These studies provided mainly a discussion on Khamenei's positions on ARTs and highlighted some ethical issues that arise from his *fatwa*, without a detailed discussion on divergent views and ethical analysis of Shia practices of sperm, egg, and embryo donation. Afshar and Bagheri (2013) analyzed the embryo donation act in Iran and identified some major ethical challenges in the act. He noted that the act does not provide adequate protections for future children. It also does not limit embryo donation to excess embryos from infertile couples and does not specify the number of embryos that each couple can give. In addition, the act is silent on the issue of genetic connection and ancestry. Therefore, the future child will be unable to inherit from their birth parents or biological parents, as the anonymity policy does not allow it. Although the study analyzed major ethical issues in the act, it did not address the ethical issues of egg and sperm donation in Shia Islam as it was not the scope of the study. Thus, little is known about the differences among the Shia scholars on gamete donation and the ethical issues that arise with practices of sperm, egg, and embryo in the Shia Muslim world. Against this background, the study aims to examine the divergent views of Shia clerics on third-party gamete donation in Shia Islam and ethical issues concerning the practices of gamete donation in the Shia Muslim world. This article is divided into three parts. Firstly, it provides a brief assessment of the available literature on the practices of ARTs in Islamic societies. Secondly, it presents the positions of Shia Islam on third-party donation. Finally, the article examines the ethical issues that arise from egg, sperm, and embryo donation in Shia societies.

ARTs and Islam

Infertility is recognized as a disease in Islam, and treatment of any disease is strongly encouraged (Saniei & Kargar, 2021). According to Islamic teaching, God did not create any disease that could not be treated (Bokek-Cohen et al., 2021). Islam also places a high value on fertility (Schenker, 2000). As a result, seeking infertility treatments is desirable to continue human procreation. However, Islamic *Sharia* urges infertile couples to seek treatment within the legal framework of Islam (Mitra, 2021; Saniei & Kargar, 2021).

Fatwas (religious rulings) regulate the personal lives of Muslims. They are issued by Islamic religious scholars; however, they are not legally binding. *Fatwas* have had a significant impact on ART practices in Muslim countries, which differs significantly from what is usual in the Western world (Larijani & Zahedi, 2007). In 1980, after the birth of the first “test-tube” baby in 1978, the Grand Mufti of Al-Azhar University proclaimed the first *fatwa* on ARTs (Inhorn et al., 2010). Afterward, many concerned authorities and religious organizations in the Sunni Muslim world passed religious ruling upholding the fundamental tenets of the Al-Azhar ruling: for instance, the Dar El-Eftaa, Cairo (1980), the Islamic Fiqh Council, Mecca (1984), the Islamic Organization for Medical Science, Kuwait (1983), Qatar University in 1993, and the Islamic Organization for Education, Science and Culture, Rabat (2002) (Serour, 2008). After the establishment

of clear guidelines based on the original Al-Azhar *fatwa* and other *fatwas* issued by these organizations, ARTs were widely accepted by the Sunni Muslim world and by most parts of the Shia Muslim world (Farid & Schotsmans, 2014).

These *fatwas* permit all forms of ARTs that use the husband's and wife's sperm and oocytes, and the embryo is put into the wife's uterus within an existing marital contract (Inhorn & Tremayne, 2016; Khan & Konje, 2019). According to Inhorn (2006a, b), the following are the main positions of Sunni Muslim religious scholars on in vitro fertilization and gamete donation:

1. It is legal to use the husband's sperm for artificial insemination.
2. In-vitro fertilization of a wife's egg with her husband's sperm is permitted, and the fertilized embryo placed back into the wife's womb is acceptable.
3. ARTs are only permitted between married couples. This means that third-party donation, whether in the form of egg, sperm, embryo, uterus, or surrogacy, is illegal.
4. A child born by a prohibited procedure belongs to the woman who gave birth to him. The child will be regarded as an illegitimate offspring.
5. Sperm banking is prohibited.
6. Cryopreservation of sperm, eggs, and embryos is permitted, although these remain the property of the partners as long as they are married. Those saved eggs, sperm, and embryos cannot be used in vitro fertilization if the marital contract ends due to divorce or the death of a spouse.
7. Surrogacy is not appropriate because it includes a woman who is not legally married to the man with whom she is procreating.

The Al-Azhar *fatwa* and all other authoritative *fatwas* in Sunni Islam prohibited all forms of third-party donation including sperm, egg, uterus, and embryo donation, and surrogacy (Padela et al., 2020). Until the late 1990s, the prohibition on third-party donation was strictly enforced throughout the Islamic world. When the Shia supreme religious leader of Iran, Ayatollah Ali Hussein Khamenei, issued a *fatwa*, which practically allowed third-party donation for Shia Muslims, a major disagreement emerged between the Sunni and Shia sects. Even within Iranian Shia circles, the *fatwa* and following laws approved by the Iranian Parliament sparked great debate, which is still going on (Inhorn, 2005, 2011; Khan & Konje, 2019). Except for Mali, no Sunni Muslim country currently allows third-party donation (Inhorn & Tremayne, 2016). Shia religious authorities, on the other hand, take a more lenient approach in their *fatwas*, as previously noted. Although some prominent Shia scholars claim that third-party donation is not permitted, some experts have stated that it may be permitted in specific circumstances (Bokek-Cohen et al., 2021). The following section discusses Shia views on third-party donation.

Shia Views on Third-Party Donation

Sunni and Shia are the two major denominations in Islam. Sunni Islam accounts for nearly 90% of the Muslim population in more than 50 Muslim countries, primarily in the Middle East, North Africa, and South Asia (Chien, 2020). Almost 10–13% of Muslims in the world are Shia (Khan & Konje, 2019). Shias are dominant in Iran. A large number of Shias also live in Iraq, Lebanon, Bahrain, Syria, Saudi Arabia, Afghanistan, India, and Pakistan (Inhorn, 2006a, b). Ninety percent of Shias are Twelvers, or followers of the 12 divinely chosen, infallible *Imams* (leaders) who make up the Prophet Mohammed's bloodline. According to them, the last (12th) *Imam* (Al-Mahdy) has vanished and will return at the end of time to bring peace to the world. Until *Imam* (AlMahdy) returns, religious experts choose a supreme religious leader to head the Shia community, and his decisions are binding (e.g., Ayatollah Khomeini and Ayatollah Khamenei). The majority of Twelver Shias live in Iran and the adjacent countries. The Ismailis, who followed a different lineage *Imam* (Ismail) after the 5th *Imam*, make up the majority of the remaining 10% of Shias (Moghimehfar & Nasr-Esfahani, 2011; Sallam & Sallam, 2016).

Although both Shia and Sunni Islam share core beliefs of Islam, each denomination has its guiding principles and opinions on everyday life, and religious scholars of each denomination often disagree on many religious and ethical issues, such as the usage of ARTs. The differences arise mainly because of the interpretation and application of main sources of Islamic laws (*Sharia*), such as the Quran, the Hadith, the application of analogy with the Quran and the Hadith, and intellectual reasoning (Saniei & Kargar, 2021). Jurists of both sects use additional principles in addition to the four main sources, albeit there are differences of opinion about how they should be applied between *madhhabs* (schools of jurisprudence). *Ijtihad* (independent legal reasoning), *istihsan* (preferential reasoning of jurists), *'urf* (local customs), and *maslaha* (general public benefit), among other jurisprudential concepts, have allowed for some flexibility and accommodated a variety of pragmatic legal judgements based on social context. The plurality of opinions among and within Muslim schools of thought in determining the legal and ethical issues is also influenced by historical and geographical differences, customs, cultural and societal diversity, and political and administrative systems within which Muslims lived in the past and live today (Moazam, 2011). Theological and legal discussions have always taken place against the backdrop of conflicts over space, power, and legitimacy between religious traditions and new, emerging political systems and the state. This has been especially true in Muslim countries emerging from colonial domination, where traditional Islamic legal frameworks coexist with constitutions and elected legislatures, functioning civil and criminal courts, other realms of power, and changing societal demands (Kelsay, 2003; Moazam, 2011).

Although the Shia sect also consults these primary sources for moral issues, Shia scholars make use of a broader collection of hadiths, including narratives from Shia Imams (the successors of the Prophet). Furthermore, the Shia use

ijtihad (independent religious reasoning) and *aql* (reason) for ethical deliberations and *fatwas* (religious rules). The *fatwas* explain how to live a good Muslim life to followers of various religious scholars and authorities. Only high-ranking religious thinkers (Ayatollahs) can issue *fatwas* in Shia (Abbasi-Shavazi et al., 2008). Shia scholars use *ijtihad* and *aql* often in their daily lives, whereas Sunni scholars consult the Quran and the Hadith more closely (Saniei & Kargar, 2021).

Moreover, one of the unique characteristics of Shia Islam is its openness to science and technology, and a lack of natural aversion to innovation (Tremayne & Akhondi, 2016). As a result, the contact between medical specialists and Shia jurists on the issues of ARTs, the jurists gained a better understanding of the ethical aspects of ARTs treatment, leading them to conclude that ARTs were a matter of science rather than an ethical and theological issue (Tappan, 2012). Thus, in favor of ARTs, unlike Sunni Muslims or Catholics, Shia scholars do not consider ARTs as “manipulation of nature” or attempting to “play with God” (Inhorn et al., 2010; Tremayne & Akhondi, 2016). Therefore, Iranian Shia religious leaders have shown great openness and flexibility in embracing scientific and technological breakthroughs, including the use of contemporary reproductive methods and third-party reproduction is one of the flourishing reproductive technologies in Iran. To legitimate the use of these technologies within an Islamic framework, *fatwas* and laws are being decreed (Larijani & Zahedi, 2007).

However, the Shia religious scholars have divergent views on third-party donation (Chien, 2020; Saniei & Kargar, 2021). Many Shia religious leaders and scholars support the Sunni’s views of prohibiting third-party donation (Asplund, 2020; Homburg et al., 2018). For example, the Iraqi Shia religious leaders Ayatollah Sistani and Ayatollah Muhammad Sai’d al Tabataba’i al-Hakim opposed all types of third-party involvement in procreation. However, the supreme leader of Iran, Ayatollah Ali Hussein Khamenei, proclaimed a *fatwa* in the late 1990s permitting third-party donation with some religious conditions (Clarke, 2007, 2008). A renowned Shia religious authority in Lebanon, Ayatollah Muhammad Husayn Fadallah, disagrees with Khamenei on the permissibility of sperm donation but supports egg donation (Farid & Schotsmans, 2014). It is worthwhile to note that the Al-Azhar ruling of 1980 and all other authoritative rulings in Sunni Islam prohibited all forms of third-party donation including sperm, egg, uterus, and embryo donation, and surrogacy (Abduljabbar & Amin, 2009; Inhorn & Tremayne, 2016; Inhorn et al., 2010; Padela et al., 2020). Sunni Islam’s position on third-party donation is based on some arguments. The religious scholars of Sunni Islam around the world argue that third-party involvement in the procreation process violates the marital contract between husband and wife and confuses paternity, descent, kinship, and the law of inheritance. They also argue that third-party involvement in ARTs results in the biological father or mother being different from the married couple. It confuses the lineage and this unclear lineage leads to the marriage of a brother, sister, and close relatives, which are strictly prohibited according to Islamic Sharia laws (Chien, 2020; Farid & Schotsmans, 2014). It is indeed mentioned in the Quran that “Prohibited to you (for marriage) are your mothers, daughters, sisters; father’s sisters, mother’s sisters, brother’s daughters, sister’s daughters...” (Quran, 4: 23).

Although Shia religious leaders uphold the aforementioned four fundamental sources of Islamic laws (*Sharia*) as the guiding principles of their life, Shia religious authorities prioritize the individual religious reasoning (*ijtihad*) using intellectual reasoning (*aql*) (Abbasi-Shavazi et al., 2008; Clarke, 2008). Many Shia scholars view that the application of intellectual reasoning has permitted Shia Muslims some flexibility to accept many new scientific discoveries and medical technologies, such as contraception, IVF, and third-party donation (Chien, 2020; Kooli, 2020). Shia Muslims embrace some aspects of *Mu'tazilas'* rationalist–naturalist theology, which grants reason in discovering ethical values. Furthermore, they view the spheres of reason and revelation as overlapping rather than mutually exclusive. Thus, they are better positioned to involve in robust *ijtihad* to take legal and ethical decisions based on reason-based deliberation and principles of the revelatory texts, rather than erring on the side of caution, thus prohibiting new technologies (Mavani, 2014). *Ijtihad* is considered to be a dynamic and hopeful method of examining sacred texts to formulate effective norms and decisions (Weiss, 1978). These are required because humans are always confronted with an almost unlimited amount of fresh human occurrences and issues that require new religious concepts and solutions. Since its formalization, *Ijtihad* has been continuously expanding in its function and application, notably in the Shia context (Landry, 2019; Mavani, 2014).

The openness of Iranian religious leaders to third-party donation is motivated by societal need, as 10–15% of Iranian couples are infertile (Inhorn, 2005). Following the Islamic Revolution in 1979, the Iranian government embraced a pronatalist position, encouraging large families, closing family planning centers, and lowering the marriage age to 9 for girls and 15 for boys. In addition, the government provided maternity benefits, gave incentives for families to have more children, and banned sterilization and abortion, both of which are illegal in Iran (Tremayne & Akhondi, 2016). Iran is still a pronatalist society. Many couples' primary motivation after marriage is to have children. Such impressions are reinforced by religious as well as cultural norms and values. Offspring are considered divine gifts in Iranian culture, and for many couples, having such children is the primary reason for marriage. Having children is often seen as a show of dedication to Iranian cultural values and strengthening the family system (Abbasi-Shavazi et al., 2008). Furthermore, the issue of infertility and response to ARTs differ based on the availability of technology and societal beliefs. People's perceptions of a society are shaped by its existing local information, cultural atmosphere, family structure, moral thinking, and belief system. Thus, Iranian's pro-natal attitude is not only the cultural constitution but also *fatwas* that support more children. In the past, Iranian Shia religious leaders played an important role in population control, issuing religious decrees in favor of family planning, which earned a UN award in 1988 (Inhorn, 2005).

Along with intellectual reasoning, the temporary marriage (*muta*) in Shia Islam has also been used to legitimize third-party donation, with some divergent views (Saniei & Kargar, 2021). According to Shia religious leaders, temporary marriage is a marital contract between an unmarried woman and an unmarried or married man for a fixed amount of money for a fixed period (Al-Bar & Chamsi-Pasha, 2015). Shia Islam permits *muta*, a type of temporary marriage that is not recognized by Sunni religious authorities. *Muta* is a contract between an unmarried Muslim woman and

a married or unmarried Muslim man for a defined period in exchange for a set sum of money (Abbasi-Shavazi et al., 2008; Inhorn, 2006b). It is performed in Iran as well as other Shia-majority countries. *Muta* marriages could be entered into by Shia men while traveling or as a method of increasing marital variety and sexual enjoyment (Haeri, 2014; Inhorn, 2006b). According to Shia scholars, Shia Islam tended to allow it because Shias were a persecuted minority who were forced to flee from place to place, and it was important to construct a type of marriage that was acceptable for their way of life. Other scholars believe that Shia religious scholars sanctified the institution to the point that some religious leaders have said that anyone who has not attempted this type of marriage has not fully completed the principles of Islamic marriage (Margalit, 2018).

Within the usage of temporary marriage and intellectual reasoning, different opinions regarding third-party donation have emerged among Shia religious scholars (Inhorn et al., 2017; Tremayne & Akhondi, 2016). Some Shia religious leaders and scholars, such as Ayatollah al-Sistani and Ayatollah Muhammad Sai'd al Tabataba'i al-Hakim, opine against all kinds of third-party donation, while some, such as Khamenei accept it with some conditions (Abbasi-Shavazi et al., 2008; Clarke, 2007; Mitra, 2021). The following two sections address the divergent views of Shia religious leaders on gamete donation.

Khamenei's Ruling on Sperm and Egg Donation

In 1999, Ayatollah Ali Hussein Khamenei, the supreme religious leader of Iran, issued a religious ruling allowing third-party donation with some conditions. Khamenei's *fatwa* on gamete donation is brief and precise (Clarke, 2008). The moral basis for legalizing donor technologies, according to Khamenei's *fatwa*, is to preserve the infertile couple's marriage through the birth of donor children, to avoid the marital and psychological problems that would certainly develop if they remained childless perpetually. In short, Ayatollah al-Khamenei placed the preservation of marriage over the preservation of lineage, which is contrary to the overwhelming Sunni viewpoint on the matter (Inhorn, 2005; Inhorn et al., 2010). Khamenei's ruling mainly addresses sperm and egg donation; it permits third-party involvement in procreation processes, including sperm donation, egg donation, and surrogacy (Bou Assi et al., 2019; Inhorn & Tremayne, 2016; Larijani & Zahedi, 2007). He argued that since third-party donation does not involve sexual intercourse, the donation cannot be considered an act of adultery. Therefore, the resulting child would not be illegitimate (Omani Samani et al., 2007).

Regarding sperm donation, he declared that the child of a sperm donor should take the name of the infertile father rather than the donor. He also declared that the child would inherit from the sperm donor, and the infertile father would be considered an adoptive father (Inhorn, 2005). Thus, the religious decree proclaimed by Khamenei makes a difference between social parents and biological fathers regarding gamete donation and gives priority to nature over nurture (Abbasi-Shavazi et al., 2008; Inhorn, 2020). By doing this, he adhered partially to the Islamic concept of

paternity by proclaiming that paternity shall be ascribed to the sperm producer, not the donor (Khan & Konje, 2019).

Concerning egg donation, he specified that egg donation is not forbidden, but both donor and commissioning parents must follow some conditions concerning parenthood. According to him, the child of the egg donor will inherit from the egg donor after her death, and the commissioning mother will be regarded as an adoptive mother, and he ascribed the maternity right to the egg donor not to the gestational carrier (Clarke, 2008). According to his ruling, similarly, in surrogacy, maternity is ascribed to the egg donor rather than the gestational carrier (Inhorn, 2005; Khan & Konje, 2019). Thus, according to his religious ruling, in the case of egg donation, and surrogacy donor anonymity is impossible.

Opposing Views to Khamenei's Ruling on Third-Party Donation

Khamenei's ruling on third-party donation raises many complexities and ethical concerns regarding the application of third-party donation among Shia Muslims. By applying their intellectual religious reasoning, some prominent Shia religious scholars have developed arguments regarding third-party donation, which sometimes fundamentally differ from Khamenei's position. Inhorn (2005) mentioned the following the main issues of disagreement among the Shia religious scholars surrounding third-party donation:

1. Permissibility of third-party donation
2. Acceptability of third-party donation if the donors are unknown
3. Whether a temporary marriage is needed for the egg and embryo donation
4. Whether the child would be known by the name of the commissioning father or biological father
5. Whether the child would inherit from the commissioning father or biological father
6. Acceptability of financial agreement in third-party donation
7. If the wife can temporarily divorce her infertile husband and marry the sperm donor

Although Khamenei's ruling allows third-party donation, a group of Shia religious scholars and leaders both in and outside Iran disagree with his permissibility of third-party donation. They, along with the Sunni religious leaders, support the prohibition of all types of third-party donation. For example, Ayatollah Yusef Madani-Tabrizi, an Iranian traditionalist and recognized jurist, argues that it is not permitted to inject the sperm of a stranger into a woman's womb, whether with her permission, whether she has a husband, or whether she has the husband's approval (Clarke, 2007). However, he believes that:

[If] in the above case insemination is carried out and the inseminated woman becomes pregnant and gives birth, the child belongs to the owner of the semen, who becomes subject to the Rulings on progeny and they inherit from each other; likewise, a woman who has a child by means of insemina-

tion is that child's mother and the Rulings on progeny are incumbent upon her. (Quoted in Clark, 2006, p. 298)

Ayatollah Yusef Sane'i, who is considered to be on the "progressive" side of Shia leaders, has stated that he, too, believes artificial insemination by donors is prohibited (Clarke, 2007). Similarly, Ayatollah al-Sistani and Ayatollah Muhammad Sai'd al-Tabataba'i al-Hakim, the Shia religious scholars in Iraq, stated that third-party donation is unacceptable (Inhorn et al., 2017; Inhorn, 2006b). Similarly, a Shia *Sharia* judge from Bahrain strongly opposed third-party donation. In his view, the Iranian religious scholars are incapable of the proper interpretation of Arabic texts, which demonstrate the unacceptability of gamete donation as they mainly speak Persian. According to him, some Iranian Shia scholars are introducing practices in the procreation process, which are religiously and morally unacceptable in Islam (Abbasi-Shavazi et al., 2008).

Their position on third-party donation, which is similar to that of Sunni scholars, is founded on other arguments. They believe that third-party involvement in procreation violates marital contact between husband and wife and muddles the concepts of kinship, descent, fatherhood, and inheritance law (Inhorn, 2011). They claim that because of third-party donation, the biological father or mother is not the same as the married couple. It may cause lineage confusion, and this ambiguous lineage may lead to the marriage of a brother, sister, or close relative, which is strictly forbidden in Islam (Padela et al., 2020).

Procreation is only permitted in the context of heterosexual marriage in Islam, and procreation outside of a marital connection is considered adultery (Clarke, 2008; Schenker, 2005). Even though third-party donation does not include bodily contact, it is considered adultery to involve a third-party in the procreation process. They contend, however, that third-party donation is an affront to the holy and divine relationship that exists between husband and wife (Inhorn, 2005).

Furthermore, they argue that third-party donation confounds the fundamental essence of family, descent, and lineage, and thus lineage confusion is forbidden and ethically unacceptable because it goes against both God's nature and will. Islam, as a religion, requires its adherents to pass on their biological ancestors (Khan & Konje, 2019). As a result, a child's biological father and mother should be the source of his or her origin (Inhorn, 2005; Padela et al., 2020). According to Islamic law, a child's father must be the mother's spouse; else, the child will be considered illegitimate (Inhorn, 2018; Khan & Konje, 2019). Furthermore, the Islamic rule of inheritance is founded on biological fatherhood and motherhood, and the proportions of inheritance are explicitly stated in the Quran (Atighetchi, 2000; Tremayne & Akhondi, 2016).

This group of scholars says that, citing Islamic sources of law such as the Quran, Islam places a significant focus on the maintenance of lineage and family, and that the marriage relationship is crucial in preserving a child's origin (Inhorn & Tremayne, 2016; Inhorn, 2006a). They back up their claims with verses from the Quran, such as "It is He who created from water, and then He established lineage and marriage relationships" (Quran, 25: 59).

Another problematic aspect of gamete donation, according to these jurists, is the possibility of incest among the offspring of unknown donors. Because Islam forbids incest, they believe there is a high risk that single donor offspring will meet and marry (Bokek-Cohen et al., 2021). The Quran says “Prohibited to you (for marriage) are your mothers, daughters, sisters; father’s sisters, mother’s sisters, brother’s daughters, sister’s daughters...” (Quran, 4:23).

Another group of Shia religious scholars disagree with Khamenei’s approach to gamete donation and argue for the necessity of temporary marriage for third-party donation to avoid the problem of adultery. It is worthwhile to mention that in his religious ruling, Khamenei mentioned that for third-party donation, temporary marriage is not necessary, as he considered that gamete donation is not adultery, as adultery needs sexual intercourse (Omani Samani et al., 2007). However, according to those scholars, third-party involvement in a marital contract is adultery. Thus, the Shia religious practice of temporary marriage is considered a solution for third-party donation (Abbasi-Shavazi et al., 2008). These scholars propose that an infertile husband of a wife can participate in a temporary marriage with the egg donor to avoid adultery. They argue that the husband should contact an egg donor for a temporary marriage during the time that the entire procedure (from egg retrieval to embryo transfer) is taking place. Temporary marriage avoids the consequences of adultery, which would arise if the husband did not marry the egg donor because polygamy is permissible in Islam (Abbasi-Shavazi et al., 2008). However, for a temporary marriage, they stated that the egg donor would be the legal mother of the child and the child would have the right to inherit from her. The infertile mother would be regarded as an adoptive mother (Inhorn, 2018).

Ayatollah Muhammad Husayn Fadallah, a prominent Shia religious scholar in Lebanon, disagrees with Khamenei’s opinion regarding the permissibility of sperm donation but he supports egg donation. According to him, temporary marriage is not a prerequisite for egg donation (Inhorn et al., 2010). According to him, a married woman is unable to acquire sperm from other males. Because a married woman cannot marry another man at the same time, she cannot have a temporary marriage with a sperm donor for sperm donation (Clarke, 2007).

These *fatwas* differed from one another and were often conflicting, but they were all equally valid and it was up to the followers to choose the edicts that best suited them (Tremayne & Akhondi, 2016). According to Tappan (2012), each Shia believer has a religious obligation to follow the religious rulings of one high-ranking source of emulation (*marja-e taqlid*). This results in a plethora of equally valid religious rulings that may differ significantly from one another and state regulations and laws. The disparity of perspectives, particularly on the issue of third-party donation, exists today and has created a space for maneuver by both medical practitioners and the infertile couples to make the best use of ARTs that is appropriate for them (Tremayne & Akhondi, 2016).

Despite all the *fatwas* for and against third-party donation, egg donation, unlike sperm donation, has been more easily accepted in Shia Islam, with the majority of Shia jurists now approving the practice (Inhorn & Tremayne, 2016). In the Shia Muslim world, sperm donation has elicited a particularly strong reaction from many conservative sectors. This is because sperm donation is considered a violation of

Iran's deeply established patriarchal beliefs. According to Twelver Shia Islam, a child inherits his genealogy from both parents (mother and father), but the father is the exclusive "owner" of the child, with the woman's duty limited to that of a caretaker. Using a sperm donor is thus equivalent to having another man's child from a Shia bioethical standpoint (Inhorn & Tremayne, 2016; Inhorn, 2005, 2006a).

Iranian Legislation on Embryo Donation

Based on Khamenei's ruling on third-party donation, the Iranian parliament prepared laws to officially legalize the use of modern medical technology in ARTs. In 2003, the Iranian parliament ratified the Act of Embryo Donation to Infertile Spouses (Abedini et al., 2016). In the same year, the Act was also approved by the Guardian Council. The Guardian Council is a responsible body that inspects whether an action taken by the government refutes Islam. The Act is very short and precise. It consists of only five articles (Afshar & Bagheri, 2013). According to Article One, the third-party donor must be a legal spouse, the donated embryos must be the result of an IVF operation, and the embryo will be delivered to the recipient's womb with the couple providing the embryos' written consent. Article Two covers the requirements for receiving the embryo (Naef, 2015). According to Article Two, the application for embryo donation must be made by both the husband and wife and submitted to the court, and the court shall issue the permit if the following conditions are met:

1. Both the donor and the recipient couples must be lawfully married and Iranian citizens.
2. The recipient couples must provide a medical certificate of their infertility.
3. Both parties should fulfill some conditions, such as proof of mental and physical wellbeing, non-curable diseases, hepatitis or AIDS, free of addiction, and informed consent forms (Larijani & Zahedi, 2007).

Article Three covers the duties and responsibilities of the embryo recipients. Article Three stipulates that the couples who are taking the embryo and the resulting child have the same rights and responsibilities as genuine parents and children in terms of care, training, maintenance, and respect. The functions of the Family Court and the legal procedure of embryo donation are described in Article Four. Article Five requires the Ministries of Health and Justice to compile the Act's bylaws (executive guidelines) within three months after its enactment (Afshar & Bagheri, 2013; Naef, 2015).

In 2005, the Iranian parliament also approved an executive bylaw of the Act (Omani Samani et al., 2007). The bylaws include definitions, prerequisites for donation and receiving embryos, duties, and responsibilities of infertility centers, and necessary conditions for storing, providing, and transferring embryos (Afshar & Bagheri, 2013). According to the bylaw, embryo donors must be married couples who are legally and ethically competent, healthy, have good IQ scores, are free of refractory diseases like AIDS and hepatitis, and are not drug abusers. The act and its

executive bylaw made no mention of the age of donors or recipients. Personal information about donors will be recorded and kept confidential, and every effort should be made to protect the privacy of donors. As a result, revealing the donor's identity requires a court order. The court must approve the recipient spouses' competency. The court's decision is issued to preserve public regulation and performs justice, which is of high value in any judicial regime (Larijani & Zahedi, 2007; Naef, 2015). According to the bylaws, the Ministry of Health's Center for Management of Transplantation is in charge of overseeing the Act's implementation (Afshar & Bagheri, 2013).

The Act approved embryo donation to infertile couples for conception. Although the Act can help infertile couples, it has been prone to misunderstanding and uncertainty due to the Act's vagueness and the lack of defined standards to govern infertility clinics. The Act did not mention its position on gamete donation. Thus, in the absence of any law particularly on gamete donation, IVF clinics in Iran are practicing sperm and egg donation, as the permission for third-party donation was given by Khamenei's religious ruling (Inhorn & Birenbaum-Carmeli, 2008). In the following section, major ethical issues in the Act of Embryo Donation in Iran, along with egg and sperm donation are discussed.

Ethical Analysis of Sperm, Egg, and Embryo Donation in the Shia Muslim World

Religious rulings issued by different Shia Muslim leaders and scholars around the world regarding third-party donation contradict one another. Nevertheless, the Iranian supreme religious leader, Khamenei's ruling on the acceptability of sperm and egg donation has had a greater impact on ARTs both inside and outside Iran. Moreover, in Iran, there is no law to regulate or any monitoring body to monitor the procedures of third-party donation except the Act of Embryo Donation to Infertile Spouses. Because there are no legal barriers, many infertile couples can fulfill their desire for children through all forms of ARTs available in and outside of Iran. (Afshar & Bagheri, 2013; Farid & Schotsmans, 2014; Whittaker et al., 2019). The developments of ARTs in Iran have had a major impact on Lebanese IVF clinics, another Shia dominant country. In 2003, an IVF clinic in Beirut initiated egg donation facilities for infertile couples, which encouraged the establishment of other IVF clinics across Lebanon providing similar facilities (Bou Assi et al., 2019; Chien, 2020; Inhorn & Tremayne, 2016).

Although third-party donation has been approved by Shia religious rulings, many ethical issues associated with sperm, egg, and embryo donation are not addressed in those rulings. The ethical concerns regarding sperm, egg, and embryo donation for procreation include the following: recipients, donors, screening of recipients and donors, the moral status of embryos, the well-being of future children, the potential risks and harm, the anonymity of donors, the right of the child to know his or her genetic origin, conflict of interest, informed consent, confidentiality, and disclosure, gamete and embryo banking, allocation of resources, distributive justice, and commercialization (Brezina & Zhao, 2012; Farid & Schotsmans, 2014; Gong et al.,

2009). This uncertainty generates complicated situations in the practices of ARTs in Iran and abroad, and medical practitioners practicing ARTs are attempting to bridge the gap using liberal religious rulings and their acquired biomedical expertise to try to meet the wishes of infertile couples.

However, the ethical concerns in the religious ruling proclaimed by Khamenei contradict the general practices of third-party donation. According to his ruling, regarding sperm donation, the donor-child will inherit from the sperm donor and the commissioning father will be accepted as an adoptive father. The donor-child will also take the commissioning father's name rather than that of the donor. Similarly, in the case of egg donation, the egg donor's child inherits from the egg donor, and the commissioning mother is considered an adoptive mother (Inhorn, 2005; Larijani & Zahedi, 2007; Tremayne, 2012). Thus, according to Khamenei's ruling, donor anonymity is not possible in sperm and egg donation. Other Shia religious experts, who only approve egg donation on the condition of temporary marriage, believe that an egg donor's child will inherit from the donor, and the commissioning mother will be recognized as an adoptive mother, which is also contrary to common gamete donation practices. A child born through ARTs, such as gamete and embryo donation, and surrogacy, is the legal child of the commissioning parents, according to all national and international legislation and guidelines on ARTs (Afshar & Bagheri, 2013; Farid & Schotsmans, 2014). The sperm, egg, and embryo donors have no parental obligations or rights to the donor-child, whether they are known or not.

Concerning egg donation, the Shia practice of temporary marriage has often been used as a means of egg commercialization (Harrison, 2014). Because there is no genuine requirement for legal registration other than a witness for a temporary marriage, women who agree to egg donation can enter into a 1-day temporary marriage for a fee. If the egg donor desires to remain anonymous, she can agree to egg donation solely by signing a written form and not by meeting with the temporary husband who will be the egg's eventual receiver. The woman simply receives money for selling the egg under the guise of a temporary marriage without providing or getting any information from the recipients (Farid & Schotsmans, 2014; Inhorn et al., 2017; Tremayne & Akhondi, 2016). Both donors and recipients want to conceal egg donation because of negative attitudes toward gamete donation, especially concerning egg donation (Bagheri et al., 2020). The main cause for this secrecy is apprehension about societal negative attitudes toward ARTs methods when using donated eggs in Iranian culture; this apprehension leads couples to conceal egg donation from relatives and friends to avoid losing their support (Zagami et al., 2019). Furthermore, society has a negative attitude toward infertile couples. Lack of awareness, negative attitudes toward gamete donation, and the stigma associated with donation methods all result in a negative attitude toward donors (Bagheri et al., 2020). Moreover, egg donors donate their eggs for monetary gain (Farid & Schotsmans, 2014; Zagami et al., 2019). Therefore, the Shia concept of temporary marriage has been used for egg commercialization.

Another ethical concern of gamete donation in Shia Islam relates to temporary marriage. Due to the wife's infertility, childless couples can have children through egg donation provided the husband enters into a temporary marriage with the donor, as Khamenei's religious decision allows men to marry temporarily

(Harrison, 2014). A fertile woman, on the other hand, cannot have a child with her egg and sperm from a sperm donor. At the same time, embryo donation allows a couple that is unable to have a child due to the husband's infertility to have their child through embryo donation; and the husband can hide his infertility from society through embryo donation. As a result, infertile men have two possibilities for having children: temporary marriage or embryo donation. In these situations, fertile wives have no choice but to ask for a divorce from their husbands if they desire their children.

Although the Iranian Act of Embryo Donation to Infertile Spouses is a major development for ARTs in Iran, some ambiguities of the Act have created misunderstandings in gamete and embryo donation. Moreover, the Act did not address some major ethical concerns of ARTs adequately (Behjati-Ardakani et al., 2015). One of the Act's primary ethical problems is that it did not provide the essential safeguards for the donor child because it did not address the donor child's genetic relationship, which is a crucial determining factor in Islamic inheritance law. That is to say, the Act did not specify whether the child would be considered the child of the recipient or donor couple (Afshar & Bagheri, 2013; Ahmadi & Bamdad, 2017; Farid & Schotsmans, 2014). The lack of clarity of genetic linkage in this Act is due to a disagreement among Islamic jurists on the subject. While some jurists believe that the future child has a genetic link to his or her father and mother, others argue that she or he has a link to her or his social father and receiving (birth) mother (Afshar & Bagheri, 2013; Naef, 2015; Tremayne & Akhondi, 2016). Thus, the donor child might not inherit from either the recipients or the donors, as the anonymity of the donors is confirmed.

Contrary to these Iranian practices, in most countries, in an informed consent form, all the rights and duties of the commissioning parents and the future child are highlighted. Furthermore, the commissioning father is named as the child's legal father on the birth certificate, establishing the rights and responsibilities of both the child and the father (Meirow & Schenker, 1997; Nosrati et al., 2019). Thus, the child's best interests are not guaranteed in the Iranian Act on embryo donation. To put it another way, the Act imposes parental responsibilities on receivers but does not recognize them as the child's parents and does nothing to protect their rights. It should be emphasized that the aforementioned strategy can be criticized when evaluating the best interests of the donor child, family, and society as a whole. Furthermore, requiring donors to adopt the newborn as their child, with all of the legal ramifications that entails, is counter to their goal. It seems reasonable to recognize the inheritance tie between the newborn and the recipients who desire to keep the child in their family and have given their agreement.

Because the Iranian Parliament is unable to pass a law against the basic tenet of Islam, the Guardian Council is the religious body to check the law and determine whether it opposes Islam. If a law is passed that contradicts the religious ruling, the law can be challenged by the Guardian Council. The Act remains silent on those ethical issues due to religious rulings proclaimed by Shia religious leaders and scholars who stipulated that the donor child would inherit from the donor because Islam mentions the law of inheritance; the lineage is the only criterion from which the child can inherit (Afshar & Bagheri, 2013; Naef, 2015). Therefore the issue has

been left to the recipient couples to make a decision (Behjati-Ardakani et al., 2015). However, the donors have been safeguarded by confirming anonymity.

Moreover, there is another contradiction between Khamenei's religious ruling and the Act on the donor's anonymity. Although the Act stated donor confidentiality, confidentiality is not possible according to Khamenei's ruling as he mentioned that the donor child would inherit from donors. In that case, in most IVF clinics in Iran, there is no official record of the gamete and embryo donors; therefore, there is a potential risk of incest through probable marriages between the offspring of the same donor, which is forbidden in Islam (Khan & Konje, 2019).

Furthermore, anonymity is a source of concern. Information about donated embryos is fully confidential, according to the bylaws, and no documentation or data about the donors or receivers can be released unless judicial authorization is obtained. However, it is unclear who can seek the data and under what circumstances, and conditions. The Act is silent in cases where a child desires to know her or his biological parents, for example, to claim her or his heritage (Afshar & Bagheri, 2013).

The Act is also silent on the number of embryos that can be donated, as well as whether the embryo should be a surplus embryo or whether donor couples can donate their sperm and eggs to develop an embryo for donation through IVF. The only requirements are that the embryo donor be a married couple and that the embryo be obtained through IVF (Afshar & Bagheri, 2013; Farid & Schotsmans, 2014). Embryo and gamete donation is thus permitted in that situation. Due to a lack of clarity in the Act, any couple, including a fertile couple, can sell their eggs and sperm to produce an embryo through in vitro fertilization. To put it another way, the current terminology provides opportunities for the commercialization of embryos. This could be a severe issue because Chapter Four, Article 8 of the bylaws specifies that infertility centers are permitted in establishing embryo banks without specifying the origins of embryos (Naef, 2015). The bylaws should be updated to guarantee that these critical ethical considerations are clarified.

This ethical analysis demonstrates that sperm, egg, and embryo donation have been practiced in IVF clinics in Iran and other Shia majority countries without considering the donor child's well-being in terms of legal, social, and psychological consequences, as well as the safety and well-being of the donor, recipient couples, and medical doctors, despite ethical, legal, and religious concerns.

Conclusion

ARTs have been flourishing medical procedures among Muslims around the world. However, the practices have been restricted by religious rulings pronounced by the religious leaders and scholars of both Sunni and Shia Islam. Shia Muslim scholars, particularly in Iran, are open to new medical technologies, opening the way for sperm, egg, and embryo donation. In Iran, the Act of Embryo Donation to Infertile Spouses has played an important role in assisting infertile couples to have children; however, due to its ambiguity and lack of detailed principles, the Act has been subject to confusion and misunderstanding. Moreover, the absence of laws and ethical

guidelines on sperm and egg donation has raised many ethical concerns and, therefore, the practice has become debatable and questionable. Besides, the religious conditions specified by religious leaders and scholars in their rulings contradict national and international guidelines for third-party donation. It seems that the Shia religious leaders might have made a compromise with the need of the infertile couples in their societies and Islamic religious beliefs. Still, this questionable and debatable third-party donation is being practiced in Iran and Lebanon. To overcome the misuse of religious rulings and the Iranian Act of Embryo Donation to Infertile Spouses, laws, and guidelines on gamete donation are mandatory, and the ambiguities in the Act need to be clarified. However, one of the challenges of this effort might be reaching an agreement with the religious rulings of religious leaders in the Shia Muslim world, which are in contradiction with the ethical and legal practices of gamete donation.

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