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SYMPOSIUM: IVF - GLOBAL HISTORIES

Conceiving IVF in Iran

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Abstract Since the 19th century the Iranian state has been concerned with the size of its population, and policies directed to its increase or decrease have been closely involved with the purpose of nation building. None of these policies have been particularly successful, except for the effective family planning campaign of the 1980s that led to a remarkable drop in population growth, which currently stands at 1.3 per annum, below the replacement level. However, all the policies have failed to address the issue of infertility, which is widespread in Iran. It was against the background of such oversight that, from 1987, some pioneering physicians introduced IVF practices to the country and engaged with the Islamic jurists, whose endorsement of infertility treatment through IVF was deemed crucial to give the practices legitimacy. This article explores the process by which assisted reproductive technologies were legitimized in Iran in all their forms and which have placed the country in the lead among the Muslim countries in the Middle East in this respect. Within Iran, following the state's latest pronatalist policies, assisted reproductive technologies have been acknowledged as a means to help the state meet its new ambition of higher population growth. 

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Introduction

The history of IVF in Iran has been shaped by the interaction between the pioneers of IVF and an interdisciplinary group of experts, together with the endorsement and strong support of the Shia jurists (*fuqaha*), referred to as 'jurists' throughout this article. As a result, the practice of IVF has been legitimized in all its forms in the country and the alliance between biomedical science and religious ideology has placed Iran at the forefront of Muslim countries in the field of assisted reproductive technologies. As Inhorn points out 'Iran is definitely in the lead among the Muslim countries in the Middle East in the application of these technologies' (Inhorn, 2005). Inhorn later reiterates 'Iran is currently the country to watch, as it has been on the "cutting edge" of new reproductive technologies' (Inhorn, 2007).

However, the evolution of IVF in Iran is inextricably linked with the broader and continued interest and involvement of the state in the reproductive life of its citizens. The direct or indirect attempt by the state to control the population, to either increase or decrease its growth, dates back to the 19th century under the late Qajar Dynasty (1785-1925), which aimed to encourage the population to grow (Kashani-Sabet, 2011). The state's concern continued under the Pahlavi Dynasty (1925-1979), which attempted to reduce population growth (Abbasi-Shavazi, 2001); and under the Islamic Republic of Iran (1979 to the present), which has reversed its population policies three times since coming to power (Abbasi-Shavazi, 2001; Hoodfar, 1995; McDonald et al., 2015; Tremayne, 2004). However, the most significant transformations, which have deeply affected the reproductive behaviour of Iranians, have taken place under the current Islamic regime, which has put in place one of the most remarkable family planning programmes ever recorded, and has induced a sea change among the generation born after the implementation of the population policies, which started in 1986. It is noteworthy that at no point have the state policies resorted to coercive measures and that the success or failure of the policies have depended on the responses of individuals guided by their own cultural values and religious beliefs. Such a strong dependence on cultural norms and religious beliefs, in turn, has justified the direct or indirect involvement of the jurists in the reproductive life of their adherents, regardless of the nature of the regime or the policies.

In this article it is argued that, controversial policies notwithstanding, the core values attached to fertility and childbearing have remained paramount in Iranian culture and that the involvement of the jurists has proved crucial in the success or failure of reproductive policies. To this end, the article will explore the process by which the pioneers of IVF, and the jurists who sanctioned them, succeeded in making these technologies compliant with the Islamic imperatives of procreation. Data presented in this article are based on primary sources and on research carried out by both authors during the past two decades. Contributions from some of Iran's pioneering physicians of IVF are also included.

The ebbs and flows of the population policies

The history of the involvement of the Iranian state with the reproductive life of its citizens dates back to the 19th century, when the state linked women's health to the building of a healthy and strong nation. According to the US-based Iranian historian Kashani-Sabet (2011), under the Qajar Dynasty, when concerns surrounding the depletion of the population were most strident, the state's pronatalist policies did not resort to formal laws regarding childbirth and its arguments were not solely based on Western concepts. The state's discourse on the importance of mothers' health appealed to Iranians because such themes could be adapted to the more familiar Islamic injunctions regarding parenting and maternity. As the author observes 'the awareness of women's health and infant mortality, which can be situated in the nineteenth century, brings maternalism to the heart of modern Iranian thought, concepts of nationhood, and tasks of a modern government.' (Kashani-Sabet, 2011). Following the Qajar Dynasty, under the later part of the Pahlavi regime, Iran also underwent a process of reform aimed at the modernisation of Iranian society, which included the inception of a government-sponsored family planning programme in 1967 to reduce the population growth of 3.1 per annum. Iran's participation in the Third International Population Conference in Bucharest in 1974 strengthened the country's commitment to reducing population growth by linking the issue of population to economic development (Tremayne, 2001). Interestingly, amid efforts to bring population growth down, being mindful of the importance of fertility in Iranian culture, a clause was added to the enactment of family protection law (Article 8) in 1974, which gave men and women an additional right to divorce their spouse if he or she proved to be infertile. However, the family planning programme under the Pahlavi rule (1967-1979) was primarily intended for the urban middle classes and was not as successful as it might have been due to its top-down policies and to a distinct lack of sensitivity towards the persisting positive core values attached to high fertility (Hoodfar, 1995; Tremayne, 2004).

After the Islamic Revolution in 1979, the regime initially took a pronatalist stance by promoting larger families, closing family planning centres and lowering the age of marriage to nine for girls and to 15 for boys, in keeping with the Islamic law (*Sharia*). The regime also offered maternity benefits, provided incentives for families to have more children and outlawed sterilization and abortion, which is not allowed unconditionally under Iranian law. As a result, in 1986 the country's census showed that the population had grown from 33.7 million to 49.4 million between 1976 and 1986, at an annual growth rate of 3.9% (Statistical Centre of Iran, 1986). These figures caused alarm among the policy makers, who feared that such rapid increase could undermine the development efforts, especially after the 8-year war with Iraq (1980-1988), which had thrown the country into social and economic crisis. The government embarked upon a massive reconstruction programme, which had the implementation of an effective family planning programme as its top priority. Mindful of the importance of

Table 1 Population census results.

Census year	Population	Average annual growth rate (%)	Population density/km ²	Proportion urban (%)	Household size
1956	18,954,704	–	12	31.4	
1966	25,785,210	3.1	16	~ 37.5	
1976	33,708,744	2.7	20	47.0	5.02
1986	49,445,010	3.9	30	~ 54.0	5.11
1996	60,055,488	2.0	36	~ 61.0	4.84
2006	70,495,782	1.6	43	68.5	4.03
2011	75,149,669	1.3	46	71.4	3.55

Demographics_of_Iran#cite_note-UN_Demographic_Yearbooks-14

reproduction and aware that such a campaign may not be received favourably by the majority of Iranians, a population conference held in 1988 resulted in the adoption of an 'Islamic' population programme, which, within less than a decade of its implementation, succeeded in bringing down population growth from 3.9% per annum in 1986 to around 2.1 by the mid 1990s. By 2012, population growth was reported at 1.3% (World Bank, 2011), a decline to below the replacement level. Fluctuations in population growth in Iran between 1956 and 2011 are presented in Table 1.

A notable feature of the family planning campaign was the cooperation between the health-policy planners and the jurists without whose endorsement and active support the policies would not have succeeded. In aiming to reduce population growth, the campaign avoided any form of coercion and, to demonstrate that it was not anti-natalist, the campaign included the provision of treatment for infertility as part of its programme. The campaign also asked for the cooperation of the people of Iran, which, *inter alia*, stressed the importance of the reciprocity between the state and the citizen and their mutual responsibilities and obligations. Some of the jurists, in their deliberations on the permissibility of family planning and in resorting to the work of the Islamic scholars, concluded that Islam does not necessarily advocate large families, but encourages better quality of life and health for mothers and babies, which can be achieved by having fewer children (Elgood, 1978; Hoodfar, 1995; Makarem Shirazi, 2015; Makhoulouf, 1991). The policies further argued that it was the duty of the citizens to help the state build a strong, independent [of foreign interference and colonialism], healthy and well-educated Muslim nation by reducing the size of families, thus linking reproduction to national identity (Hoodfar, 1995; Tremayne, 2004, 185).

A noticeable outcome of the campaign has been the emergence of uniformity in the childbearing values and behaviour among all layers of society, as shown by the findings of a study carried out by the Iranian Centre for Research on Asian and Oceanic Population:

Those couples who have just married and those who have been married for up to three years show no inclination to have any children at all, or perhaps just one. This tendency over the past decade illustrates that for women of urban and rural backgrounds, from different social classes, the poor and the rich, illiterate and literate, all have a similar attitude to giving birth these days, leading to the rapid downward trend in the Iranian TFR [total fertility rate]. (tabnak, 2013).

Following the drop in population growth to below the replacement level, the authorities have re-introduced some of the pronatalist policies of the early 1980s, as reported by Population Policy (2010):

Iran is dramatically changing its population policy. Iranian President Ahmadinejad announced a new policy to encourage population growth saying that previous family planning was ungodly and a Western import. The new policy will pay families for newly born children and deposit money into their bank accounts through to their 18th birthday.

Further measures taken by the state included the dismantling of the family planning programme and the re-routing of funds to promote pronatalist policies. Thus far, the generation of reproductive age has ignored the state's plea to have more children and although the authorities blame economic hardship as the cause of the decline in childbearing, other factors, such as the effective family planning of 1980-1990s and a successful literacy campaign, have played a major role in a profound transformation of the country's reproductive practices, which previously valued high fertility (Tremayne, 2004). And, when the Supreme Religious Leader, Ayatollah Khamenei, announced publicly that it was 'wrong' to continue with the family planning programme and that the two-decade-old policy of controlled population growth must end, he was challenging these, by now, deep-seated values in the generation of reproductive age, who had grown up to believe in the advantages of having fewer children. The Supreme Leader admitted 'one of the mistakes we made in the 90s was population control' and stressed the necessity of building a strong nation and that Iran's goals were to reach a population increase from the current 80 million to 150 million by 2050 (tabnak, 2013). Interestingly, the justification for having larger families to form a strong nation is identical to the argument used in the 1980s family planning campaign, advocating smaller families for the purpose of building a stronger nation.

While the family planning programme of the 1980s delivered most of its promises, it failed to address infertility, which remained unfulfilled. The sporadic efforts of the Ministry of Health to address infertility proved negligible and more of a symbolic gesture than a genuine commitment. For example, the allocation of a small budget of \$10,000 per infertile couple to be sent abroad for treatment, among other similar efforts, proved a drop in the ocean in the face of the magnitude of demand. Other attempts were made by both the public and

private sector: for example, in 1985, in the Shariati Hospital (affiliated to the Tehran University of Medical Sciences), which had just been equipped with ultrasound, experts took the first measures to treat infertility. However, no evidence about the practice and its success is available. In 1988, similar practice was performed in the IVF section of Aban Hospital in Tehran. However, the relevant documents about the results are not available. Therefore, in the absence of local modern medical facilities and faced with persistent pressure from family, kin and society to reproduce, infertile couples continued to resort to traditional options such as treatment from local healers, polygyny or informally adopting children from among family members. Although adoption has been allowed and practiced in Iran since the 1960s, it has not been considered as a genuine substitute for having one's own biological children. While the stigma of infertility may be widespread throughout the world (Inhorn and Van Balen, 2002), it varies in degree and having children remains an imperative in the Middle Eastern cultures, where biological relatedness remains the only acceptable form of procreation. Procreation, for the purpose of perpetuation of family and kinship, which are fundamental, sacrosanct institutions, acting as the guiding principle of social organisation, has been paramount in Iranian culture. Traditionally, voluntary childlessness has not been an option and failing to reproduce has been a stigma and considered detrimental not only to family and kin group, but also a threat to the stability of society. Even though in the past few decades, modern medical technologies have created a new understanding of the causes of infertility and have raised the hopes of infertile couples that conception is possible, and in spite of family size having shrunk considerably, the deeply rooted values attached to viewing infertility as shameful and as a 'failure' have not been dislodged accordingly. While choosing not to reproduce is frowned upon, the inability to reproduce is regarded as a damnation for which the infertile individual pays a heavy price (Inhorn and Tremayne, 2012, Introduction).

The history of IVF

IVF was introduced to Iran against the backdrop of the family planning programme of the 1980s. At its inception, the physicians, who were mindful of the Islamic beliefs, which consider procreation to be within divine power only, sought the opinion of the jurists, the majority of whom approved of the practice of IVF on the condition that it remained limited to married heterosexual couples, as conception outside marriage, in Islamic law (*Sharia*) is equivalent to adultery and the resulting child is considered illegitimate or a bastard (*valid-zena*). At this juncture, debates on IVF for married couples did not lead to strong controversial arguments among the jurists, but it was the introduction of third-party gamete donation, which led to a more profound exploration of the permissibility of these state-of-the-art technologies and their implications for the entrenched beliefs surrounding reproduction. The use of a third party to procreate seemed discordant with the prohibition by Islamic law of conception outside marriage, as mentioned earlier, and with the position that the only acceptable form of reproduction is through heterosexual marital union, resulting in one's own biological children (Inhorn, 2006b; Inhorn and Tremayne, 2012). Conception through third-party donation therefore proved problematic

as it obstructed the possibility of using reproductive technologies to help infertile couples conceive with a stranger's gamete. The jurists, therefore, needed to find valid arguments to justify the legitimacy of third-party donation, which could be a potential threat for the purity of lineage and yet allowed the continuity of the family line. However, although some solutions were eventually found, the deliberations did not lead to a unanimous verdict and, to date, the opinions of jurists remain divided on this issue, as discussed below (see section on legitimisation of IVF, below).

The application of IVF

The first definite step taken towards the application of IVF begins with a congress held on obstetrics in 1987, which was hosted by Iran's University of Medical Sciences (IUMS) in cooperation with the Iranian Centre for Education, Culture and Research (ACECR). At the congress' invitation, Professor Safaa Al-Hasani, one of the leading IVF experts in Germany, introduced IVF technology to the congress. Professor Al-Hasani's crucial role in introducing and training local physicians in IVF, and in setting up infertility clinics, won him the title of 'the leader of IVF' in Iran. Simultaneously, attempts were made by ACECR to establish infertility clinics in Tehran. Subsequently, Dr Aflatounian, Director of the hospital housed in Shahid Sadoughi University of Yazd (central Iran), invited Professor Al-Hasani to help establish the first IVF clinic in the city. The location of Yazd itself is indicative as the city epitomizes the interface between tradition and modernity. In the 1980s Yazd was officially classified as the most conservative city in the country on the basis of its lowest rate of divorce. A comparative study of four Iranian provinces, Gilan, Sistan and Baluchestan, Western Azerbaijan and Yazd, showed that Yazd had retained most of its traditional and religious characteristics, in spite of its highest levels of socio-economic development in the country, and a relatively high level of female literacy at around 80% (where literacy rate refers to the percentage of people with the ability to read and write; Abbasi-Shavazi et al., 2003). The study showed that women in Yazd placed more emphasis on education as a means of enhancing marriage and that the rate of early marriages was higher in Yazd than in any of the other four provinces (Abbasi-Shavazi et al., 2003; Tremayne, 2006). The findings implicitly confirmed the persisting importance of reproduction above all other institutions, regardless of the degree of social and economic development.

The development of IVF technologies in Yazd led to the training of the first group of Iranian physicians, who were sent to Germany to train under Professor Al-Hasani, and the opening of the first IVF clinic in the city's Afshar Hospital, where the first IVF baby was born in 1990. However, prior to the above, the first successful pregnancy through IVF took place in Tehran, in Aban Hospital in 1989, which resulted in a miscarriage in the second month of pregnancy. In late 1989 the second attempt of IVF by Aban Hospital resulted in pregnancy but the six-month pregnant woman died in a car crash. The first IVF babies, a set of twins, were born in Tehran, on 27 December 1991, in Aban Hospital. All the IVF treatment of the patients and the Caesarean section, carried out at Aban Hospital, were performed by Dr Mohajeri, Dr Aboutaleb Saremi and Dr Jalil Pakravesh (personal interview

with Dr Jalil Pakravesh, Tehran, 2015). The second IVF baby to be born in Tehran was born on 23 July 1993 at the Royan Institute.

To return to the consequence of the Afshar Hospital's success, mentioned earlier, the spread of the news and the subsequent overwhelming response by infertile couples, who swarmed to Yazd from all over the country, revealed the tip of the iceberg as far as demand for infertility treatment was concerned and led to the training of further groups of physicians in Germany and Denmark. The first clinic to open in Tehran, in 1991, was the Royan Institute, where the first IVF baby was born in 1993. The first infertility treatment section established in Tehran was at Aban Hospital in 1987, followed by the Research and Clinical Centre for Infertility at the Shahid Sadughi University of Medical Sciences, established in 1989 in Yazd.

Currently 61 infertility clinics (24 public and 37 private) operate in the capital, Tehran, as well as in some major cities such as Isfahan, Shiraz, Tabriz and Mashhad. The majority of the public clinics are housed within the public hospitals and work under the supervision of university medical departments. Two of these establishments merit a brief mention as pioneers of assisted reproductive technologies in Iran and because of their continuing role in introducing the most recent developments and familiarizing the public with them. The Royan Research Institute and the Avicenna Research Institute, which are both affiliated to ACECR, have remained the leaders and most influential institutes in the field of reproductive technologies in Iran. As mentioned above, the Royan Research Institute was the first infertility clinic established in Tehran (1991) where the first IVF baby was born (1993) in the city. Today, this institute is not only one of the most popular infertility clinics in Tehran, it is also well known internationally by specialists and academics in the field of bioreproductive technologies for its Annual International Congress on Reproductive Biomedicine, which it has held successfully for almost 16 years. The Avicenna Research Institute was established by one of the founding members of the Royan Institute, Dr Mohammad Mehdi Akhondi, who, mindful of the distinct absence of coordination and development of existing expertise and facilities, founded the Avicenna Research Institute in 1998. The objectives of the Institute, the first of its kind, are: education, research and treatment, all of which are channelled through its research groups on reproductive genetics, reproductive immunology, reproductive infection, embryology and bioethics and law. However, currently most of these services are offered by the private clinics only and at relatively high cost. Even the public clinics, operating as small units within public hospitals, are not free and the patients have to meet treatment costs. Amid the expansion of infertility clinics, the state's occasional interest in infertility has stemmed from its focus on nation building rather than the actual treatment of infertility. For example, to reward war heroes who had suffered spinal injuries, and become infertile as a result, during the Iran-Iraq war, the government allocated a special infertility unit to treat them. Interestingly, even this clinic was not completely free and the war veterans themselves had to meet a portion of the cost based on the extent of the injuries they had suffered. Nevertheless, the state's lack of interest in infertility treatment did not discourage Iranian physicians from introducing the latest IVF technologies, as they developed elsewhere, as is shown in the following chronology:

1992 – Birth of the first baby following retrograde ejaculation using intrauterine insemination (IUI) first started in 1989 in Aban Hospital by Dr Jalil Pakravesh (personal communication).

1994 – Birth of the first baby resulting from intracytoplasmic sperm injection (ICSI) and the birth of the first baby through egg donation carried out in Yazd by Dr Mohammad-Hossein Amir Arjomand (personal communication).

1996/97–Use of ICSI+ percutaneous epididymal sperm aspiration (PESA) resulting in the birth of a baby at Shariati Hospital, Tehran, carried out by Dr Hojat-Allah Saeedi (personal communication).

1998–First case of transferring an embryo produced from testicular spermatozoon by microinjection carried out by Dr Akhondi (the author).

2004–Birth of the first baby born following pre-implantation genetic diagnosis (PGD) Royan Institute, Tehran, carried out by Dr Leila Karimian (personal communication).

Indeed, the use of IVF in a range of contexts such as PGD (as a preventive measure for diseases with a genetic basis or for sex selection); sperm, egg and embryo donation; surrogacy; fertility preservation; and animal conservation (freezing of egg, sperm and embryo), are commonplace in Iran.

In the section '*Ebbs and flows of population policies*' above, it is stated that the expansion of IVF clinics took place during the family planning campaign of 1986-1996. In line with the policies of the campaign, the Ministry of Health focused on population reduction and infertility remained low on its list of priorities and was classified as cosmetic surgery. As a result, infertility did not qualify for coverage by any of the approved health insurance schemes. Furthermore, the extent of infertility itself remained unknown until a survey carried out by Avicenna Research Institute, which studied 17,000 households, showed that the prevalence of infertility among married couples in the general population was 20.2% (19.9% in urban areas and 22% in rural areas) (Akhondi et al., 2013). These facts gradually began to focus the attention of the health planners and through the active campaigning by the physicians and the recent pronatalist policies, the Ministry of Health has shown a more serious commitment to infertility treatment. For example, it has encouraged insurance companies to cover the expenses of medical and diagnostic tests and to meet the cost of the medication for the treatment. The Ministry also plans to increase the number of infertility clinics in the public sector. Finally, the lack of the state's interest in infertility treatment has led to an improvement and expansion of IVF centres in the private sector, and through increased competition, to an equilibrium in the charges made by the clinics.

Legitimisation of IVF, lineage recast

Unlike most secular countries, where the responsibility for the legitimisation of biotechnologies, including assisted reproductive technologies, is the responsibility of a secular committee of experts and the parliament, in Iran their legitimisation has fallen on the Islamic jurists (*Foghaha*, sing. *Faghih*), as was mentioned earlier. In doing so, the jurists engaged with the medical practitioners to better understand the broader ethical

implications of assisted reproductive technologies for lineage, family and kinship, which Ebrahim Moosa, cited in [Inhorn and Tremayne \(2012: p.3\)](#) explains as follows:

In terms of ethics, Muslim authorities consider the transmission of reproductive material between persons who are not legally married to be a major violation of Islamic law. This sensitivity stems from the fact that Islamic law has a strict taboo on sexual relations outside wedlock (*zina*). The taboo is designed to protect paternity (i.e. family), which is designated as one of the five goals of Islamic law, the others being the protection of religion, life, property and reason.

In elaborating further on the bioethics concerning assisted reproductive technologies, Tappan, a scholar on Islamic ethics, theology and law, demonstrates that, in seeking justification and legitimisation for the use of bioethics, 'clinicians and bioethics consultation groups consider a range of justificatory sources, including civil laws, *fatawi* (singular *fatwa*), reason and examples of bioethical cases from elsewhere, to come to a decision' ([Tappan, 2012](#)). Morgan, a social anthropologist specialising in Islamic bioethics and contemporary Islamic legal discourse and authority, also argues that to understand bioethics in the Muslim Middle-Eastern context more fully, a broader approach is required beyond the sole focus on religion ([Clarke, 2009, 2012](#)).

It was, therefore, being mindful of the need to address the full implications of reproductive technologies, that on the introduction of IVF, the jurists, the medical practitioners and the ethicists and others from related disciplines, engaged in an extensive examination of the congruence of these technologies with the rules attached to Islamic ideas of procreation. To this end, the jurists, who are the sources of emulation (*marja-e taghliid*) of the Shia followers, resorted to the interpretation of the Islamic sources (*ejtehad*), and issued their religious edicts (*fatawi*, sing. *fatwa*) on the permissibility of IVF technologies, and more specifically, on third-party donation. However, these rulings differed from each other, and at times were contradictory, but all remained equally valid and left to the followers to choose those edicts, which suited them best. As [Tappan \(2012\)](#) explains '...there is also a religious duty upon each Shia believer to follow the rulings of one high-ranking source of emulation. This leads to a plurality of equally authoritative religious rulings, which might differ greatly from one another, and may vary from the state law as well'. The diversity of opinions, especially on the question of third-party donation, persists to date and has opened up a gap, which allows room for manoeuvring by both the medical practitioners and by the infertile to make choices on the most suitable use of assisted reproductive technologies as befits them ([Tremayne, 2009](#)).

In general, the edicts of these sources of emulation fall into three groups: (i) those which forbid the use of IVF in any form, especially third-party donation, which is viewed as the intrusion of a third person into the marriage, and as such is forbidden (*haram*) and which also leads to confusion in the purity of the lineage, (for example the late Ayatollah al-Ozma [Madani-Tabrizi, 2009](#)); (ii) Those opinions which are favourable towards the use of some assisted reproductive technologies based on 'conditional permission' and depending on the circumstances ([Khomeini, 2001](#)); and (iii) the edicts,

which permit the application of assisted reproductive technologies in all their forms ([Yazdi, 1996](#)). In the latter set of opinions, assisted reproductive technologies are interpreted as a means of mediating between God and his subjects to allow procreation and not as interfering in God's design. These proponents argue that conception in a petri dish bypasses any suggestion of an intrusion by a stranger and that this form of conception plays an instrumental role in resolving some of the theological concerns that would otherwise arise from third-party donation. These concerns include the possibility of the parties involved in IVF – the practitioners, the donors and the recipient of gametes, most of whom are strangers to each other – coming into bodily contact with each other; and the ensuing implications, for adultery and incest, according to the Islamic law. The proponents favouring IVF also ruled that one of the distinguishing features of the Shia branch of Islam is its openness towards science and technology, and a lack of automatic objection to innovation. Effectively, the engagement between the medical experts and the jurists resulted in a better understanding, by the latter, of the ethical dimensions of IVF practice and led to them concluding that IVF belonged to the domain of science and was not a matter for ethical-theological considerations (see also [Tappan, 2012](#)). Thus, concerns about the 'manipulation of nature' or trying to 'play God', through procreation by IVF, were alleviated by the argument in favour of IVF practices in Shia Iran, unlike among the Sunni Muslims or in Catholicism ([Eslami, 2007](#); [Inhorn, 2012](#)).

In order to legitimize third-party gamete donation, some of the jurists put various solutions forward. One such suggestion was that of temporary marriage ([Haeri, 1989](#)), a uniquely Shia practice, which is similar to permanent marriage but has a time limit agreed between the two parties, and can be between one hour to 99 years ([Makarem Shirazi, 2004](#); [Tremayne, 2009](#)). This would allow the infertile party to receive gametes from the donor, who would be the temporary spouse and therefore a legitimate donor. The gametes would then be fertilized on a petri dish, but without any bodily contact taking place between the two parties. Other Islamist jurists allowed donation on the condition that no form of bodily contact, such as 'touch' or 'gaze', should take place between the recipient of the gamete and the practitioner of the opposite sex, as these could potentially be the instigators of forbidden (*haram*) relations between the two parties, who are not married to each other and therefore prohibited from coming into close contact ([Khamenei, 1999](#); [Sistani, 1999](#)).

The fundamental premise upon which all the jurists, regardless of their stance, based their edicts (*fatawi*) has been the implications of third-party donation for lineage and inheritance, the latter being automatically linked to lineage in the Islamic law (*Sharia*). Although a fuller explanation of lineage and inheritance are beyond the remit of this article, a brief clarification may help illustrate the connection between the two and the complexities involved in determining the hitherto unresolved issues of inheritance in cases of third-party donation. Lineage (*nasab*) as defined by [Coulson \(1971:22\)](#), cited in [Mir-Hosseini \(2000\)](#) is described as follows:

Sharia's notion of kinship and filiation are encapsulated in the concept of *nasab* [lineage], which translates not only as parentage and kinship, but also as filiation and descent status. While the child takes its *nasab* from both sides, it is the paternal side, which has

ascendancy over the maternal. In all schools of Islamic law the primary significance of *nasab* is that of paternity, closely tied to legitimacy, through which a child acquires its legal identity and religion.

Under such notions, the child belongs to his father's lineage, which extends beyond the father and includes the paternal grandfather, who also has equal rights over the child. In the absence of the father or grandfather, the rights go to the paternal uncles. (Ebadi, 2003; Mir-Hosseini, 2000). Such rights are reciprocal and the child can also claim his rights from his biological father and grandfather. Lineage, therefore, consists of a complex web of relatedness, involving duties and obligations, which cannot be described or understood in simple terms. In addition, under the Islamic law, inheritance rights are exclusively linked to biological relatedness and to marriage as between the wife and the husband, except for the one-third of the heritage on which there is a right (for the deceased) to bequeath (to make a will). It is therefore understandable that, on the introduction of third-party gamete donation, the Islamist jurists' main concern was the implications of such technologies for lineage and inheritance. An example of the deliberations on these issues can be found in a publication by the Avicenna Research Institute (2001), which was the outcome of a conference bringing a number of leading religious and legal experts together to examine the consequences of these technologies, above all, on lineage and inheritance. The clear proof of the persistence of the exclusivity of the right of blood relatives to inheritance is seen in the case of adopted children. Although adoption has been allowed in Iran for several decades now, the adopted child does not have an automatic right to inherit from his adoptive parents.

Following on from the paramount importance of biological relatedness, those jurists opposed to IVF ruled out recognition of a child conceived through third-party donation as legitimate. In their opinion, biological relatedness is the only acceptable form of procreation. The jurists in favour of IVF, on the other hand, took a different route by redefining relatedness. According to this definition, the parent, in agreeing to donate his/her gamete, transfers the parental rights to the adoptive parent and forgoes any claim on the resulting child (Sanei, 1998). In the process, a new representation of relatedness has emerged, replacing the biological link as the basis of relatedness with that of permission/consent on the part of the parent. For the opponents of third-party donation such justification of parentage is equal to a challenge to the foundation of lineage, family and kinship, as explained earlier.

The question of mutual rights between biological parents and children, and inheritance remains unresolved to date based on the absence of any laws, and due to a number of controversial rulings. For example, several of the favourable edicts, in defining the status of the child, have ruled that the child belongs to its biological parent and inherits from him/her, but takes its name from the 'adoptive' parent (Sanei, 1998). This would have been in line with the rules defining lineage and right to inheritance. But, at the same time, the required rules of confidentiality often lead to the anonymity of the parent and thereby make it impossible for the child to know the identity of the parents, and therefore have the possibility of inheriting from them (Gooshki and Allahbedashti, 2015). In addition, amidst these controversies, medical practitioners face a

number of other emerging ethical and legal questions, which they either resolve by further consultation with the jurists, or as best they can, using their own judgment and in consultation with their colleagues. These issues include the permissibility of a financial transaction between the recipients and donors of gametes (considering that donation is supposed to be a gift), the use of supernumerary embryos, sex selection and fertility preservation.

The medicalisation of infertility

As discussed above, with the arrival of each new reproductive technology, medical practitioners engaged in a dialogue with the jurists to inform them on the scientific aspects of IVF practices. Some of the medical pioneers, for example the Avicenna Research Institute, also took the initiative to educate the public by organising conferences, carrying out research, making films, appearing in the media and by extensive publication of informative booklets for their patients to explain the medical causes of infertility. The publicising of infertility proved so effective that, as observed by one of the authors in this article (Tremayne), infertile women were seen on the television speaking openly about their infertility and its treatment through IVF. Men, however, remained more reluctant to do so, as male infertility remains a more serious stigma to date, as does the open admittance of sperm donation, which by and large is frowned upon by the conservative layers in society (Abbasi-Shavazi et al., 2008; Tremayne, 2012). Consequently, the fervent debates and the diversity of opinions engaging the jurists with experts in medical, legal, ethical and psychological disciplines, resulted in the question of infertility, which is one of the most intimate and stigmatized aspects of life, coming to the public forum and being discussed openly, a process which resulted in the medicalisation of infertility, but in the public arena only. In private, the anonymity of treatment through assisted reproductive technologies paved the way for infertile couples to conceal their infertility fully even from the nearest members of their kin group, leading to stigmatising infertility further, but at the same time, reducing the pressure to conceive by the kin group.

The medical practitioners, in their enthusiasm to promote the use of the emerging reproductive technologies, continued to play an active role by opening up debates on the use of those technologies, which could not be justified solely by religious edicts and thus smooth the path for their legitimisation. For example, on the introduction of embryo donation in Iran, as no amount of religious interpretation could justify its practice, the Avicenna Research Institute took the lead by organising a conference which proved instrumental in the presentation of a bill to parliament and the passing of a law in 2004 related to embryo donation to infertile couples. Likewise, it was through the initiative of the same research institute that the agenda for the recognition of infertility as a disability came to the public arena and led to the provision of insurance for infertility treatment. With the introduction of surrogacy, questions similar to those surrounding third-party gamete donation were raised, and surrogacy was allowed on the basis of the same edicts issued for third-party donation. Stem cell research received a favourable *fatwa* (Hosseini Tehrani, 2015; Makarem Shirazi, 2014), as did sex selection, but only on the condition that its use is restricted to the avoidance of sex-linked medical

conditions rather than for choosing the sex of the child or discriminating against a particular sex (Akhondi and Rasekh, 2011a, 2011b; Makarem Shirazi, 2015). Currently, research is taking place on mitochondrial gene therapy and its application. Effectively, to date, all the reproductive technologies have been legitimized but these approvals apply to married heterosexual couples only and no single or homosexual individual qualifies for treatment (Law on Embryo Donation to Infertile Couples, Act 1). In addition, the concerns of some individuals that by resorting to IVF they may be breaching the cultural and religious taboos and committing a sin, have been alleviated through the favourable religious edicts.

Discussion and conclusion

From what precedes, it is clear that since the 19th Century the Iranian state's interest in the reproductive life of its citizens has been shaped by its broader ambition of nation building, rather than out of a concern for the well-being of the population. Central to the success or failure of state policies has been the direct or indirect involvement of the jurists in matters concerning the reproductive life of the citizens. Under the Qajar dynasty, pronatalist debates, advocating the necessity of building a healthy nation, were received favourably as they coincided with the prevailing religious and cultural values attached to reproduction. Under the Pahlavi regime, the policies to reduce population growth failed to gain popularity at the grass roots level as they were aimed predominantly at the urban middle classes and also conflicted with the norms and values favouring high fertility, and had no support from the religious leaders. However, the same anti-natalist policies proved effective under the Islamic Republic's regime, which supported them and had as one of its core arguments the benefits of a smaller nation as key to the state's security and prosperity. Likewise, the active engagement of the jurists with IVF technologies has been crucial in their legitimisation. One of the unintended outcomes of the complex process through which assisted reproductive technologies has been legitimized and practised, has been the fact that Iran has gained a distinctive position in assisted reproductive technologies among many countries in the world. On the one hand, Iran, which is an Islamic state following the Islamic law (*sharia*), limits procreation to heterosexual married couples. In this sense, it differs from those countries, where third-party donation is available to married and unmarried couples, single parents and non-heterosexuals. On the other hand, Iran differs even further from other Muslim countries, where the majority of Muslims are Sunni and do not allow third-party donation in any form (Inhorn, 2006a).

However, the determination by the jurists to legitimize the practice of assisted reproductive technologies have resulted in a broadening and redefinition of lineage, from that of an inexorable blood link between the parent and the child, to include relatedness via the transfer of parental rights from the biological parent to the social/adoptive parent. Such re-casting remains controversial to date, not only among the jurists, but for some of the infertile users of assisted reproductive technologies too.

A further outcome of assisted reproductive technologies have been a shift in the public perception of infertility, from the realm of a predetermined affliction to the domain of the

medical sciences as a treatable condition. Such a move has proved to be a double-edged sword as, on the one hand, the medicalisation of infertility has helped 'normalize' it and diminish its stigma in the public arena, whilst on the other hand, the privacy offered by IVF clinics has made it possible to keep infertility a secret and has reinforced the shame associated with barrenness. Both responses merely confirm the importance of reproduction, which is shown to remain paramount in essence if not in form.

Finally, faced with a population decline, the role of assisted reproductive technologies have become increasingly important for the state, which views the rise in voluntary childlessness as a national challenge and is resorting to every legitimate means, including facilitating infertility treatment through IVF, to persuade those of reproductive age to contribute their share of children to the nation.

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