WHY GENDER?

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Jude Browne

University of Cambridge

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CHAPTER 6

Gender, Sperm Troubles, and Assisted Reproductive Technologies

Marcia C. Inhorn

LOUISE BROWN, THE WORLD'S FIRST TEST-TUBE BABY, was born more than forty years ago in England. For Louise Brown's infertile mother, Lesley, in vitro fertilization (IVF), developed at the University of Cambridge, was a "hope technology" (Franklin, 1997), allowing Lesley to overcome her tubal-factor infertility and nine years of heart-breaking involuntary childlessness. Lesley's story involved a complex reproductive quest, in which she traveled with her working-class husband, John, from their home in Bristol to Bourn Hall Clinic in Cambridge to undergo the IVF procedures. Then, due to intense media scrutiny and religious opposition, Lesley and John were forced to travel to yet a third location, Oldham General Hospital in the North of England, for the secret delivery of baby Louise by Cesarean section on July 25, 1978.

Four decades on, IVF has engendered reproduction among the parents of more than 8 million IVF babies now born (ESHRE, 2018). These IVF parents include people of all sexualities using a variety of assisted reproductive technologies (ARTs), including IVF, donor eggs and donor sperm, and commercial gestational surrogacy. Most recently, IVF has extended the possibility of biological reproduction to transgender men and women, who are cryopreserving their eggs and sperm for future IVF-assisted

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births.[1] This development is having a profound impact on our perceptions of the gendered social order (also see Judith Butler and Jack Halberstam in this volume). Not only has IVF engendered reproduction for those who would never otherwise become parents of biogenetically related offspring, but it has also performed a profound gender intervention, by helping to overcome the tremendous social suffering of infertile women, who are often blamed and ostracized for their childlessness (Cui, 2010).

IVF has also led to a breakthrough in remediating the various "sperm troubles" found among cisgender men. These troubles may include oligozoospermia (low sperm count), asthenozoospermia (poor sperm motility, or movement), teratozoospermia (abnormal sperm morphology, or shape), and azoospermia (absence of sperm in the ejaculate). Such sperm troubles contribute to more than half of all cases of involuntary childlessness in the world today. Furthermore, as shown in a variety of recent studies from multiple nations, sperm quality appears to be decreasing globally, including in many Western countries. Scientists now view these sperm troubles as a "window on the health" of this generation, the next, and the planet as a whole (Barratt, Anderson, & De Jonge, 2019).

The problem with sperm is that very little can be done to improve its quality. Thus, sperm problems are usually refractory to treatment (Inhorn, 2012). Until the 1990s, the only known solution was donor insemination (DI), the oldest infertility technology, but one that, for some, was socially and religiously unacceptable (Becker, 2002). However, in 1991, a variant of IVF called intracytoplasmic sperm injection (ICSI) was introduced in Belgium. Through microscopic manipulation of "weak" sperm – low in number, poor in movement, or abnormally shaped – these sperm could be injected directly into human oocytes, effectively "forcing" fertilization to occur. With the invention of ICSI, otherwise "sterile" cisgender

[1] Currently, researchers are contemplating IVF pregnancies in transgender women via uterine transplantation.

men could now father biogenetic offspring. This included even azoospermic men, who produce no sperm in their ejaculate and must therefore have their testicles painfully aspirated or biopsied in the search for sperm. In short, for the first time in human history, ICSI gave seriously infertile cisgender men a chance of becoming biological fathers.

The importance of ICSI in overcoming cisgender men's sperm troubles cannot be underestimated. For such men, the inability to impregnate a partner is often highly stigmatizing, and mistakenly conflated with impotency, or erectile dysfunction (Inhorn, 2012). This "fertility–virility linkage" means that men who are infertile are assumed to be impotent, even though most are not. This sexual misattribution also means that sperm troubles are deeply hidden, with many women blamed for what, in fact, are the sperm problems of their cisgender male partners.

Given the high prevalence of sperm troubles around the world, as well as the associated stigma and secrecy, the 1990s introduction of ICSI proved to be a major breakthrough. By the mid-1990s, cisgender infertile men were flocking to IVF clinics around the globe, hoping to access this new "hope technology." Today, ICSI is the most-performed ART in the world, outstripping standard IVF cycles sixty-fold in some parts of the world. ICSI provides an interesting case study of how a problem of manhood (i.e., cisgender men's inability to impregnate) has been recast as a problem of health (i.e., a disease, like diabetes or hypertension) through a process of ICSI-related medicalization.

Over three decades as a medical anthropologist, I have been "traveling with" IVF and ICSI across the Arab world, watching how the global introduction of these two ARTs has served to reconceive Arab gender identities and relations (Inhorn, 1994, 1996, 2003, 2012, 2015, 2018). This gender reconfiguration is key to understanding the shifting burden of reproductive "blame" and responsibility away from women and toward men; the willingness among both men and women to pursue ARTs together as a sign of conjugal solidarity; and a lessening of the threat of infertility to gender

identity or the achievement of adult personhood. Across the Middle East, which now has one of the top-performing IVF sectors in the world (Inhorn & Patrizio, 2015), IVF and ICSI hold out hope for millions of infertile people – making not only test-tube babies, but also fathers and mothers in the process.

In what follows, I take readers to Dubai – one of the seven United Arab Emirates (UAE) and the Middle East's only "global city" (Sassen, 2001, 2005). Dubai is now attracting medical travelers from around the world, many of whom are seeking assisted conception (Inhorn, 2015). Indeed, Dubai is fast becoming known as a transnational IVF and ICSI "reprohub," where those with fertility problems can receive expert reproductive assistance. Based on ethnographic research conducted in Conceive,[2] one of the country's first and busiest IVF clinics, this chapter explores the problem of cisgender Arab men's sperm troubles and the ICSI treatment quests of such men coming to Dubai from scores of other nations. The story of Hsain,[3] a young British Muslim man of Moroccan descent, is told in the second half of this chapter. Having been given "no hope" by British National Health Service (NHS) physicians, Hsain and his wife traveled to Conceive, where Hsain placed his "only hope" in ICSI's technological salvation.

CONCEIVE – A COSMOPOLITAN CLINIC

In 1991 – the very year that ICSI was being "birthed" in Belgium as the variant of IVF designed to overcome sperm troubles – the UAE opened its first IVF clinic in a Dubai government hospital. Since then, the UAE's assisted reproduction sector has flourished, with more than a dozen IVF clinics, most of them private facilities, opening in the country over the past three decades.

One of these private IVF centers is called Conceive, where I undertook a six-month study of "reprotravel" to Dubai.[4] At

[2] This is the clinic's real name. [3] This name is a pseudonym.

[4] The terms "reproductive tourism," "fertility tourism," "procreative tourism," and "cross-border reproductive care," which are used widely by both scholars and the

Conceive, I was able to conduct in-depth, semi-structured, ethnographic interviews with 219 ICSI- and IVF-seeking men and women coming from fifty different countries of origin.[5] They hailed from an equal number of Middle Eastern (fifteen) and European nation-states (fifteen), followed by an almost equal number of Asian (nine) and African (eight) countries. The United States, Canada, and Australia were also represented, with Latin America being the only part of the world entirely absent from this otherwise global study population. Ninety-four interviews were undertaken with infertile couples together, since marriage – as shown by a valid marriage license – is a strict requirement for assisted conception mandated by the UAE Ministry of Health. However, I also interviewed thirty-one men and women alone, either because they had traveled by themselves that day or they were waiting for their spouses to complete various medical procedures in the clinic.

Interviews ranged anywhere from one to three hours, were mostly conducted in English (the lingua franca of Dubai), although sometimes in Arabic, and focused on the often tortuous IVF and ICSI journeys of the 125 patient-couples in the study. Indeed, over the course of my research, I tracked the comings and goings of a diverse group of international medical travelers from five continents and fifty different countries.

Most of these couples had reached Conceive through circuitous global routes of referral, sometimes from friends or family members, but often through referrals from physicians in other countries. Furthermore, most of the couples in my study felt "lured" to Dubai because of its cultural cosmopolitanism – namely, they wanted to receive IVF services in a global location, where clinical

media (Gürtin & Inhorn 2011; Hudson et al., 2011), are criticized by infertile travelers themselves, who prefer the more neutral descriptor, reproductive travel. However, because reproductive travel and reproductive travelers can become cumbersome if used repeatedly, I prefer to use reprotravel and reprotravelers as convenient contractions. In this regard, I am following a long legacy of medical anthropological contractions, including, for example, biomedicine and reprogenetics.

5 The main study was conducted from January through June 2007. However, I also made follow-up research trips to Conceive in 2009, 2010, and 2013.

care could be effectively delivered across national, ethnic, religious, linguistic, and cultural lines. In this regard, it is fair to say that Conceive had developed a global reputation for its cosmopolitanism.

With more than twenty staff members hailing from the Middle East, Africa, South and Southeast Asia, and Western Europe, Conceive could be seen as practicing a kind of "global gynecology," making infertile patients from abroad feel comfortable with its high-quality, patient-centered gynecology services, delivered multiculturally by conationals in Arabic, Hindi, Urdu, and several other regional languages. Like Dubai itself, Conceive was a place of "cosmopolitan conceptions" – a clinic where self-consciously crafted medical cosmopolitanism had worked to create a vibrant, international clientele.

Many of these reprotravelers were infertile cisgender men. According to Dr. Pankaj Shrivastav, Conceive's clinical director,[6] about 40 percent of the couples presenting to the clinic faced problems of sperm quality and quantity. This was true in my own study as well. In total, 53 of the 125 husbands, or 42 percent, were infertile. Ten of these men were azoospermic, showing no signs of sperm in their ejaculate. Of these ten men, two had banked their sperm at Conceive prior to cancer treatment, becoming azoospermic after chemotherapy and returning to Conceive for ICSI. The rest of the infertile men in my study suffered from a variety of sperm defects, including poor count, poor motility, and abnormal shape, sometimes alone but often together (e.g., low count plus poor motility). In most of these cases, men knew that they were infertile before traveling to Conceive, but in a few cases, the diagnosis was made only upon arrival.

The infertile men in my study came from twenty-one countries. As shown in Table 6.1, most were from other Middle Eastern nations or from Europe. But African and Asian men were also traveling to Conceive. This was particularly true of Indian men, who comprised the single largest group, or nearly one-third of the total sample.

6 This is his real name and title.

TABLE 6.1 *Fifty-three cisgender men with sperm troubles: reprotravel to Conceive from twenty-one countries*

Africa	Asia	Euro-America	Middle East
Djibouti (1)	India (16)	France (1)	Bahrain (1)
Somalia (1)	Pakistan (2)	Germany (1)	Egypt (1)
South Africa (2)	Philippines (2)	Hungary (1)	Iran (2)
Sudan (3)		Netherlands (1)	Lebanon (4)
		Sweden (2)	Palestine (3)
		United Kingdom (3)	Syria (3)
		United States (1)	UAE (other emirates) 2
N = 7	*N* = 20	*N* = 10	*N* = 16

Why had these men traveled to the United Arab Emirates to obtain treatment? In most cases, they had been unable to access effective ICSI services in their home countries due to several major "arenas of constraint" (Inhorn, 2003). For men coming from Africa, resource constraints were most prominent, particularly the total absence of IVF clinics in most sub-Saharan African countries.[7] At the time of my study, infertile men from the Horn of Africa – countries such as Djibouti, Somalia, and Sudan – were heading to Conceive because ICSI services were literally unavailable to them back home.

European men faced a different arena of resource constraint. Many came from countries where IVF and ICSI cycles were available but rationed by the state. The United Kingdom and its NHS stood out in this regard (Hudson & Culley, 2011). At Conceive, I met a group of reprotravelers who I came to think of as the "NHS refugees." These NHS refugees were British couples who were seeking refuge in Dubai after being deemed ineligible for publicly funded IVF and ICSI cycles or had been put on long NHS waiting lists, sometimes for years. Some of these couples had been disqualified from IVF and ICSI altogether simply by living in the wrong postal code, where local NHS authorities refused to fund assisted

[7] Of forty-eight sub-Saharan African countries, only fifteen had at least one IVF clinic as of a 2010 international surveillance project (Jones et al., 2010). Thirty-three nations, or more than two-thirds, lacked IVF facilities.

reproduction at taxpayers' expense. Others had reached NHS clinics, only to receive ineffective, low-quality care from overextended IVF clinicians.

In addition, some of the European men in my study could be considered "reproductive outlaws," by virtue of the fact that they were attempting to evade their countries' assisted reproduction laws. These kinds of legal constraints were especially difficult for azoospermic men coming from a number of European countries where ICSI cannot be performed if sperm must be aspirated directly from the testes (because of concerns about genetic defects being passed to an ICSI child) (Pennings, 2010). Other countries forbid IVF or ICSI services if a man or woman carries an infectious disease such as hepatitis. Because Europe has the highest number of these kinds of assisted reproduction laws (Jones et al., 2010), it also has the highest number of law evaders (Pennings, 2002, 2004, 2009). Consequently, some of these European reproductive outlaws were making their way to Dubai for ICSI services. This was especially true for those needing percutaneous epididymal sperm aspiration (PESA), a form of testicular aspiration in which sperm are extracted directly from the epididymis, one of the sperm transport vessels. PESA was first invented at Conceive, making PESA a specialty service at this clinic.

Finally, quality of care was one of the main drivers of reprotravel among the men and women in my study. This was especially true for couples coming from South Asia and Eastern Europe. In many cases, reprotravelers spoke of IVF clinics in their home countries that were crowded well beyond capacity, delivering low-quality, ineffective, and even harmful treatment. Iatrogenesis, or physician-induced harm, was a major theme of many of the medical horror stories I heard at Conceive, stories filled with disenchantment and sometimes life-threatening malpractice. By the end of my study, it was clear to me that infertile couples' desires for high-quality IVF and ICSI services were a major driver of their transnational reprotravel. Indeed, the search for patient-centered care may

be one of the most underappreciated aspects of global reproductive mobilities in the new millennium (Dancet et al., 2011).

ICSI – THE HOPE TECHNOLOGY FOR SPERM TROUBLES

Having said all this, for the infertile Muslim men in my study, reprotravel to Dubai was often motivated by an additional important factor. Namely, for infertile Muslim men living in home countries where ICSI is not available or accessible, they are left with few other avenues to fatherhood. This is because sperm donation – the only other solution to bypass sperm problems (Becker, 2002) – is widely prohibited across the Muslim world, from Morocco to Malaysia (Inhorn & Tremayne, 2012).[8] Sperm donation is equated with genealogical confusion, mistaken paternity, and illicit sexuality and is thus widely refused by Muslim men, who argue that a donor-sperm child "won't be my son" (Inhorn, 2006, 2012). Similarly, legal adoption as practiced in the West – where a child takes the adoptive father's surname, can legally inherit from him, and is treated as if he or she is a biological child – is also prohibited for reasons of genealogical confusion and patrilineal impurity (Inhorn, 1994, 1996, 2003, 2012).[9]

Given these Muslim prohibitions against both sperm donation and legal adoption, the introduction of ICSI – a technology that relies on a patient's own sperm – was considered a watershed event in the Muslim world. As noted earlier, ICSI solves sperm problems in a way that IVF cannot. With standard IVF, spermatozoa are retrieved through masturbatory ejaculation, and oocytes (eggs) are surgically removed from the ovaries following hormonal stimulation. Once these gametes are retrieved, they are introduced to

[8] Iran and Lebanon are the only two Muslim-majority countries in which sperm donation is practiced, because of divergent Shia Muslim *fatwas* (or non-legally binding but authoritative religious decrees) which have allowed the procedure. However, even in those countries, sperm donation is unpopular among infertile men, and is rejected by the majority of Muslim religious authorities as being *haram*, or sinful.

[9] As with sperm donation, legal adoption is practiced in very few Muslim countries – only Iran, Tunisia, and Turkey within the Middle Eastern region.

each other in a petri dish in an IVF laboratory, in the hopes of fertilization. However, "weak" sperm (i.e., low numbers, poor movement, misshapen) are poor fertilizers. Through micromanipulation of otherwise infertile sperm under a high-powered microscope, ICSI allows for the direct injection of spermatozoa into human oocytes, effectively aiding fertilization. As long as one viable spermatozoon can be extracted from an infertile man's body, it can be ICSI-injected into an oocyte, leading to the potential creation of a human embryo.

Because ICSI significantly increases the chances of producing a test-tube baby, it has acquired special meaning for infertile Muslim men as a "hope technology" (see Inhorn, 2018). Since being introduced in Egypt in 1994, ICSI has led to a virtual "coming out" of cisgender men with sperm troubles across the Muslim Middle East, as these men acknowledge their infertility and seek the ICSI solution (Inhorn, 2003, 2012).

ICSI may be a revolutionary technology for the world's infertile cisgender men. But as Franklin (1997) rightly points out, hope does not always translate into a take-home baby. Indeed, ICSI entails many challenges. For one, the precisely timed collection of semen can produce deep anxiety and even impotence, but is imperative for all ICSI procedures (Inhorn, 2012). Some men may produce no spermatozoa whatsoever, even within their testicles, eliminating ICSI as an option. Furthermore, ICSI may not succeed, leading to endless rounds of fruitless repetition among some couples. ICSI is also highly dependent on the complicated hormonal stimulation and extraction of healthy oocytes from women's bodies. Whereas the fecundity of older men can often be enhanced through ICSI, women's fertility is highly age-sensitive, with oocyte quality declining at later stages of the reproductive life cycle. In short, older women may "age out" of ICSI, causing highly gendered, life-course disruptions surrounding women's biological clocks (Inhorn, 2003, 2012). In addition, men may arrive at ICSI after years of other failed treatment options. ICSI is expensive, usually costing US$2,000–$6,000 per cycle in the Middle East, with

the prices in the UAE reflecting the high end of that financial spectrum. Thus, ICSI is often deemed a last resort, especially for those without adequate financial resources. Finally, when it does succeed, ICSI may perpetuate genetic defects into future generations, through the sperm defects and other inherited disorders that may be passed by infertile men via ICSI to their sons. The ethics of passing genetic mutations to children has been a significant cause for concern (Bittles & Matson, 2000; Spar, 2006).

Despite these challenges, ICSI is the best hope – indeed, the only hope – for most infertile Muslim men, especially those with serious sperm problems. The emergence of ICSI in the Middle Eastern region has led to a boom in demand for this technology – a demand that has never waned. ICSI is by far the most common ART now undertaken in the Middle East today. IVF clinics such as Conceive are filled with ICSI-seeking men from around the globe, who are depositing their sperm for inspection, micromanipulation, and ICSI injections. To demonstrate this ICSI promise for infertile cisgender Muslim men, I highlight in the next section the reprotravel story of Hsain, a twenty-two-year-old British man of Moroccan heritage. Because of his deep frustration with visits to the British NHS, Hsain had become a reprotraveler to global Dubai, undertaking ICSI in this transnational reprohub.

A REPROTRAVEL STORY – HSAIN AND HIS HIDDEN SPERM

Hsain was the British-born eldest son of working-class Moroccan immigrants. Expected to be independent by the age of eighteen, Hsain opened a small mobile phone shop in the outskirts of London. The shop was so successful that Hsain was able to afford marriage within the first year of his store's opening. He chose Fatima as his bride. Also a Moroccan immigrant to Britain, Fatima was seventeen at the time of her marriage. Pale-skinned with an East London cockney accent, Fatima seemed more British than North African. But her long *djellaba* (a floor-length, long-sleeved dress

worn in Morocco) and modest headscarf signaled that she, like Hsain, was a devout Muslim.

As teen newlyweds, Hsain and Fatima were very much in love and hoped to become young parents: "I've always said to myself that I wanted to have my children by the time I was 30," Hsain explained to me. "I want to be running with my children in the park, being close to their age. Having a child at an old, old age doesn't appeal to me. I'd rather be done when I'm young. I did want a child at an even younger age, but God didn't want it. I would have had a four-and-a-half-year-old child by now if things had gone my way." Hsain continued. "I never really took it seriously, because you come across a lot of people who are trying, trying, trying. I can certainly say that we did try! But, obviously, nothing happened. Really, over the years, nothing happened. Nothing happened at all."

Two years of marriage without any form of contraception led the couple on a trip to the local NHS IVF clinic. "I did all the blood tests, and I had ultrasounds, and a [diagnostic] laparoscopy," Fatima explained. "And they said at the end of the day that everything is fine, everything is fine." When Fatima's tests all came back normal, Hsain was asked to undergo semen analysis, which he repeated several times. The South African Muslim physician working in the NHS clinic delivered the bad news to Hsain in this way: "Look. You have no sperm. You've only got, basically, a couple of options. Either use donor sperm, or try to do ICSI. But the probability of ICSI succeeding is not very high. We would have to do an operation on you – to take out some tissue from your testicles, and see if we can find any sperm."

As devout Sunni Muslims, Hsain and Fatima were horrified by the first option of sperm donation. "Because of our religion, for us, it wasn't an option at all," Hsain told me. "But over there, they do it! The guy who recommended donor sperm to us, he is a Muslim! And he kept saying: 'Why not? You should do it! You should do it!' He was trying to convince us to do it, even though he's Muslim. I don't think he was a very religious person himself. So we spoke to

my parents about this, and my father spoke to some imams in London. And, oh no! They did *not* recommend that we do that."

Having rejected sperm donation altogether, Hsain was willing to accept the second recommendation of testicular biopsy. This would determine whether Hsain was suffering from a simple blockage in sperm transport, or a more serious form of non-obstructive azoospermia, in which sperm were simply not produced in his testicles. "This is not a part of the body that you like to be operated on – not for a man!" Hsain exclaimed. "And I would not like to do this again. But really, I had no choice. In other cases with no sperm, he was telling [those men] to go to Spain, because there they have fertility units, where his clients from the NHS can get donor sperm. But for me, this was basically out of the question. So instead, they took three samples of specimens from my testicles. And they found nothing, nothing, nothing."

In early 2007, Hsain and Fatima decided to travel to Dubai, where they met with Dr. Pankaj at Conceive. As Hsain explained to me:

> When we got here, we saw this Dr. Pankaj, who consulted our files. Once he saw these results, he said, "Look, we're going to do your sperm test again." I done [*sic*] it here, and then we waited. And within half an hour, he came back to me and said, "We found sperm. We found maybe 5 percent sperm." We didn't believe him! We thought it was somebody else's. So many years in England, we were told, "Absolutely nothing. Not at all!" Here, they showed me under the microscope. Just for me – I got "special treatment." They said, "We spun it. We spun it in the machine." I'm sure they did this in the UK, or at least I reckon they did. But maybe they didn't. So Dr. Pankaj suggested to freeze it, and I didn't want to because I didn't know this clinic. And you never know what goes on inside clinics these days! Leaving your sperm and it's live sperm! But I have a bit of confidence because a) You see the pictures [of babies] here on the walls, and b) he knew our South African doctor back in London. So we froze it, and we came back three days later to give some more sperm. We left two samples. You see, the more you have, the better, because some of the sperm can die. I was, I was honestly thinking that I'd have to do another [testicular]

> biopsy. So as soon as they found sperm [i.e., in the normal ejaculate], I couldn't believe it! Because when I walked in here, the first thing I said is, "I've got no sperm." I brought my test results from England, and all the reports said zero, zero, zero. But Dr. Pankaj said, "Throw it in the bin!" He didn't want to look at the reports. He said, "I found sperm. I don't need to see that."

As it turned out, Hsain had a classic case of cryptospermia, or "hidden sperm" in his ejaculate. The Palestinian Muslim laboratory director at Conceive had taken special care to centrifuge Hsain's semen sample, creating a "pellet sample" in which even the smallest number of spermatozoa could be detected. Although Hsain was seriously infertile – with fewer than 1,000 sperm found, when a fertile man would have at least 15 million sperm per milliliter under the microscope – Hsain nonetheless produced enough viable spermatozoa to be a candidate for ICSI.

In a happy state of shock over the recovery of his hidden sperm, Hsain was eager to get on with the ICSI procedure. However, Dr. Pankaj was very honest with Hsain and Fatima that their chances of success with an ICSI cycle were no higher than 38 percent. As practicing Muslims, the couple took this in stride. "God will give me a child if he wants to," Hsain calmly told me.

Fortunately for Hsain and Fatima, Conceive was their *nasib*, or "destiny." Hsain's once-hidden sperm were effective in producing several viable ICSI embryos, three of which were transferred into Fatima's womb. On the day of the pregnancy test, I was at the clinic eagerly awaiting the news, along with the couple and several Conceive staff members. Fatima was seated on a red couch in the clinic administrator's office, while Hsain stood beside her. When the Palestinian lab director came in to deliver the news, the happy smile on her face presaged the results of a clearly positive pregnancy test. Everyone cheered and hugged, with several other staff members coming by to congratulate the young couple.

Hsain and Fatima remained in Dubai for the next six weeks, determined that Dr. Pankaj himself would undertake the initial pregnancy ultrasound. The ultrasound showed that two of the

couple's three embryos had not implanted in Fatima's womb. However, Fatima was definitely pregnant with a single fetus – the product of her eggs and Hsain's hidden sperm, which, although lost in the British NHS labyrinth, had been "found" in a cosmopolitan clinic in Dubai.

CONCLUSION

As shown in the preceding reprotravel story, new global mobilities are being enacted by men such as Hsain, who are searching far and wide for technologically assisted reproduction and fatherhood. For cisgender men with sperm troubles – and especially married Muslim men – ICSI has provided a technological breakthrough for a reproductive health problem that is highly prevalent yet often hidden and exceedingly difficult to overcome. Furthermore, many men with sperm troubles live in areas of the world where access to ICSI is limited for a variety of reasons. As a result, increasing numbers are becoming reprotravelers, searching for ICSI services in sites known to be effective in this regard. Belgium, where ICSI was initially invented, was the first to achieve global ICSI fame (De Sutter, 2011), but Dubai, too, has become an ICSI reprohub, with reprotravelers from Africa, Asia, Australia, Euro-America, and many parts of the Middle East flocking there in the hopes of fulfilling their fatherhood dreams and aspirations.

As shown in this chapter, ICSI has engendered reproduction for men such as Hsain, but these men's reproductive stories are rarely told. As I and my fellow anthropologists have argued (Inhorn et al., 2009), cisgender men are relegated as the "second sex" in reproduction. We tend not to include them in our reproductive studies, or we vilify them as being inherently detrimental to women's reproductive health and child well-being (Wentzell & Inhorn, 2014). But, as I hope this chapter has shown, these omissions and derogations do not tell the whole story. As seen with

Hsain, many cisgender men do what they can to achieve their own and their partner's reproductive goals – putting their bodies, their finances, and their emotions on the line in the process.

In general, we need to generate significantly more research on men – both cis- and transgender – *as reproducers* (Almeling, 2011; Mohr, 2018; Wahlberg, 2018). When we fail to study men, we are unable to assess whether they care about reproduction, how they enact reproductive decision-making and planning, how they deal with reproductive health challenges, whether they search for reproductive technologies (including contraceptive as well as conceptive technologies), what they hope for in terms of fatherhood, how they nurture their pregnant partners, and what they do to care for their children. Men play many fundamental reproductive roles, with far-reaching implications for their own health, and the health and well-being of their families. Reproduction also fundamentally alters the gender relations between partners, and, when successful, provides an opportunity for parents to model positive gender socialization for their offspring.

Ultimately, then, we need to engage men in our reproductive studies – especially as the ARTs themselves continue to evolve in the twenty-first century. As of this writing, ART technological innovations, including uterine transplantation, mitochondrial donation, ovarian tissue freezing, and gene editing, are opening up new horizons of technological hope for *both* men and women of *all* sexual identities in a complex world of reproductive possibility.

Indeed, before his death in January 2015 at the age of ninety-one, Carl Djerassi – an emeritus Stanford chemistry professor who was widely known as the "father" of the birth control pill and who is the benefactor of the Diane Middlebrook and Carl Djerassi Professorship at the University of Cambridge – made a bold prediction (Djerassi, 2014). Namely, Djerassi opined that by the year 2050, egg freezing will be as routine among young professional women as oral contraceptive usage is today. And when the time comes to thaw and fertilize those frozen eggs, women will

inevitably turn to the most guaranteed method of fertilization – which, as shown in this chapter, is ICSI.

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