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Assisted reproduction in Indonesia: policy reform in an Islamic culture and developing nation

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Abstract This article considers how religious and economic factors shape assisted reproductive technology (ART) policy in Indonesia, the world's most populous Muslim country. Infertility clinic policies are grounded on both the views of the country's powerful Islamic coalition and those of the worldwide Islamic community. Indonesian government officials, physicians, and Islamic scholars have expressed concern over who can use ART and which procedures can be performed. Indonesia has also faced economic challenges related to ART, including inadequate health insurance coverage, inequitable access to ART, and maintenance of expensive ART infrastructure. The prohibitive price of infertility treatment and regional differences in the provision of health care prohibit most Indonesians from obtaining ART. In the absence of a shift in religious mores and a rapid reduction in poverty and inequality, Indonesia will need to adopt creative means to make ART both more available and less necessary as a solution to infertility. This paper suggests policy reforms to promote more affordable treatment methods and support preventative health programmes to reduce infertility rates. This country-specific analysis of the laws and customs surrounding ART in Indonesia reveals that strategies to reduce infertility must be tailored to a country's unique religious and economic climate. 

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Introduction

Research in comparative bioethics and health law has become prominent in the last three decades. As bioethicist Leigh

Turner argues, a 1984 article by Renée Fox and Judith Swazey comparing medical ethics in the USA and China spurred the growth of cross-cultural bioethical research (Turner, 2003, pp. 104–5). Assisted reproductive technology (ART) remains

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a consistent source of ethical debate, and the impact of infertility worldwide has prompted the study of regional experiences with infertility. At the first World Health Organization meeting specifically devoted to international discussion of ART, representatives from 22 countries attended and presented publications highlighting infertility treatment in a number of regions around the world ([World Health Organization, 2002](#)). Research on infertility and ART in Islamic countries presented at this conference and in the current literature predominantly focuses on Egypt, Lebanon, and Iran ([Inhorn, 2005](#); [Inhorn, 2006](#); [World Health Organization, 2002](#)).

Indonesia is notably absent from the transnational research on infertility treatment. This omission in the literature is striking given Indonesia's status as the world's fourth largest nation and the country with the largest Muslim population (205 million), with the majority ascribing to the Sunni tradition of Islam ([Pew Research Center, 2010](#); [Pew Research Center, 2011](#); [U.S. Department of State, 2015](#)). Studying Islamic bioethics in general is crucial not only for meaningful cross-cultural comparisons, but also for informing interactions worldwide among physicians and patients of Muslim descent ([Brockopp and Eich, 2008, p. 1](#)). Considering regional and national differences in views surrounding controversial medical topics is especially important for Islamic bioethics, with its disparate and often conflicting influences from trained religious scholars, influential lay speakers and international groups such as the Organization of the Islamic Conference ([Brockopp, 2008, pp. 4-5](#)).

Currently, scholarship on ART in Indonesia consists of anthropological, medical and religious studies research generated by Australian and Indonesian universities and of articles in online blogs and newspapers. Medical anthropologist Linda Rae Bennett of the University of Melbourne has made great strides in addressing the barriers to IVF treatment in Indonesia and the discrimination experienced by women undergoing infertility treatment ([Bennett, 2012](#)). Faculty at Indonesian medical schools have provided feedback on ART policy recommendations that appear in the Indonesian Code of Ethics ([Fakultas Kedokteran Universitas Sumatera Utara \(Medical Faculty of the University of North Sumatra\), 2006](#)). Fertility specialists affiliated with these schools have gathered at national conferences to consider the difficulties of IVF treatment, including the social and psychological aspects of care ([Fertility and Subfertility Management Scientific Programme, 2015](#)). Specific discussions on the interface of ART and Islam are usually confined to student thesis research ([Bayi Tabung \(In-Vitro Fertilization\), 2012](#); [Peni, 2014](#); [Safaruddin, 2012](#)) and texts authored by faculty at Indonesian universities. Ali Ghufron Mukti and Adi Heru Sutomo of Gadjah Mada University have authored a book on Islam and medical ethics in Indonesia, including ART ([Mukti and Sutomo, 1993](#)). Other short academic discourses from departments of religion at national universities explore Islamic law and bioethics in Indonesia ([Bakry, 1996](#); [Shidiq, 2004](#)).

ART is also discussed in Indonesian online blog and news articles. Blog articles written by lawyers ([Rachmadsyah, 2010](#)) and physicians ([Ratman, 2012](#); [Yendi, 2011](#)) on ART treatment and policy are admittedly few in number. However, both Indonesian and English-language news outlets in Indonesia have covered ART, addressing concerns about the safety and efficacy of IVF procedures ([Kartika, 2013](#); [Rulistia, 2013](#)) and,

less commonly, the status of ART within Islamic law ([Rusian, 2010](#)). Although it is unclear how influential these academic works and online publications have been on individuals seeking infertility treatment, and on the development of religious thought surrounding ART in Indonesia, they are important indicators of an existing discourse about ART among certain segments of the population.

Drawing on these sources, this paper aims to include Indonesia in the ongoing international conversation about ART by providing an overview of how religion and economics influence Indonesian ART policy. It will also suggest long-term and more immediate reforms that can improve access to and reduce reliance on ART simultaneously. This research is based on the aforementioned anthropological studies, medical school faculty policy proposals, conference proceedings, religious department theses and faculty publications from Indonesian universities, and online blog and news articles. Furthermore, this paper relies on transnational Islamic medical ethics texts and regional studies of ART policy in other developing and Islamic nations, in order to make cross-cultural comparisons to inform Indonesian policy recommendations. Uniquely, it also includes interviews with two fertility physicians at Permata Hati Infertility Clinic at Dr. Sardjito Hospital in Yogyakarta, Indonesia.

The author argues that although Indonesia is a secular country, its laws and social norms surrounding ART closely parallel mainstream Islamic beliefs. Many of the norms are codified in Indonesian law, demonstrating the pervasiveness of Islam within the political sphere. Others remain uncoded but still control clinical practice, such that Islamic law effectively bars the practice of certain procedures. Poverty and inequality also influence the need for and availability of ART in Indonesia. Despite high rates of infertility among the poor, Indonesia's limited health insurance does not provide coverage for infertility treatments of any kind and use of ART is limited to the wealthy. Fertility clinics are almost all located in Indonesia's major cities, which adds another barrier to obtaining ART for rural residents who may not be able to afford travel to urban centres. Certainly, it is conceivable that rural residents may actually desire treatment in Indonesia's cities to protect their privacy. Given the price of treatment at these clinics, the additional travel costs for these individuals would make treatment even more difficult.

This study will show that Indonesia must contemplate creative policy change to reduce the country's burden of infertility and improve accessibility to ART. Lifting the country's prohibition against gamete (egg or spermatozoa) donation and surrogacy, a change that would benefit infertile couples and that already has been implemented by Iran and Lebanon, is unlikely to occur in Indonesia's Sunni Islamic culture. Moreover, Shi'ite scholars in Iran and other Muslim countries do not uniformly agree with Iran and Lebanon's permissive attitudes towards third-party donation and surrogacy ([Inhorn, 2006, pp. 437-9](#)). Although embracing a national health insurance scheme that would cover expensive infertility treatments would improve utilization of ART, it may prove more beneficial to direct health care dollars towards addressing the Indonesian population's more widespread health deficiencies. Instead, Indonesia should consider adopting more affordable, if less advanced, ART techniques and advocating for sexually transmitted infection (STI) prevention and treatment.

Religious influences on ART

Islam has a profound effect on Indonesian law through *fatwas*, or legal opinions, issued by the Indonesian Council of Ulama (MUI) – the national coalition of all major Indonesian Muslim groups – and through election of Islamic political parties (Gillespie, 2007; U.S. Department of State, 2010). The MUI can issue *fatwas* that do not have the force of law but remain highly influential in the legislative process (U.S. Department of State, 2010). Consequently, almost all of the regulations about who can use ART and which procedures are practiced in Indonesia align with major Islamic religious rulings on the topic, despite Indonesia's status as a nominally secular independent republic (U.S. Department of State, 2010). Islam also pervades Indonesian law and policy through a process that Indonesian political scientist Anies Rasyid Baswedan terms 'Political Islam' (Baswedan, 2004, p. 670). That is, even without Shari'a (Islamic religious legal code) as a basis for the Indonesian state, Islamic political parties and organizations have recognized their ability to fulfil an Islamist agenda through the election of Muslims to government positions (Baswedan, 2004; Griffel, 2007, pp. 1–4; Nation's Largest Muslim Group Laments "Waning Influence", 2011; U.S. Department of State, 2010). Moreover, the central Indonesian Government has often failed to prohibit geographic regions of the state from implementing Shari'a law (U.S. Department of State, 2007; U.S. Department of State, 2010).

With the development of assisted reproductive technologies, Islamic religious communities worldwide have had to develop new recommendations and issue *fatwas* on the moral standing of certain procedures. Most Islamic interpretations of ART consider the general practice to be acceptable – and often required – in the face of infertility (Schenker, 1992; Syed, n.d.). In keeping with the emphasis on family, marriage and procreation found in the Qur'an, *Sunnah*, and *Hadith*, Indonesia has also embraced ART that makes reproduction possible for more couples (Serour, 1998).

Despite the strong support of ART from within Islam, it can only be used within the context of an ongoing heterosexual marriage (Schenker, 1992). Homosexual couples cannot access ART, since most Islamic scholars interpret the Qur'an as condemning homosexual partnerships (Dhami and Sheikh, 2000, p. 353). In accordance with these interpretations, ART is legal in Indonesia for married heterosexual couples. Article 127 of Indonesia's Health Law No. 36/2009 (*UU Kesehatan no. 36 tahun 2009*) states that pregnancy achieved by artificial means 'can only be done by married couples' (Yendi, 2011). Article 16 of Law No. 23/1992, an older form of the 2009 Health Law, places similar restrictions on ART. Article 82 of the 1992 law states that '[a]ny person who willfully. . .attempts pregnancy outside of the natural means in a way that does not comply with provisions of Article 16. . .shall be punished with imprisonment of 5 years and a maximum fine of Rp. 100,000,000.00 [approximately US\$7,600]' (Presiden Republik Indonesia (President of the Republic of Indonesia), 1992). Thus, this law bars single women, unmarried couples or homosexual couples from using ART.

With the exception of Iran and Lebanon – predominately Shi'ite Muslim states that allow leading religious authorities (*Marja*) to practice 'individual religious reasoning' (Abbasi-Shavazi et al., 2008, p. 5) or *ijtihad* and have officially

embraced gamete donation after Ayatollah Khamenei's 1999 *fatwa* (Inhorn, 2005; Shahi, 2012, p. 115) – most Islamic countries see third-party donation as a threat to the sacred marriage contract and to the ideal of pure lineage demanded by Islam (Inhorn, 2005; Mirza, 2004, p. 109; Serour, 1998). In accordance with international and Indonesian Islamic *fatwas*, Indonesian law implicitly prohibits donation or selling of egg or spermatozoa for the use of ART, and although there is no explicit prohibition against the practice, clinics refuse to engage in third-party donation (Haryadi, 2012; Yendi, 2011). The Indonesian Ministry of Health's 1999 guidelines for infertility clinics specify that infertility treatments must only use gametes from the couple seeking medical care and prohibit the commercial practice of buying and selling spermatozoa and eggs (Yendi, 2011). The MUI has openly condemned the practice of sperm donation in a *fatwa* issued on June 13, 1979, invoking similar reasons given in other Middle Eastern Muslim states for banning third-party gamete donation: concerns that the introduction of outside gametes is tantamount to adultery, that it threatens pure lineage, a child's inheritance and his or her well-being, and that the child could face social condemnation or confusion as to the identity of his or her biological father and mother (Inhorn, 2005; Mirza, 2004, p. 109; Purnama and Soaleh, 2009, p. 16; Schenker, 1992; Serour, 1998; Syed, n.d.).

Consistent with the dominant beliefs about surrogacy in Islam, the practice is prohibited in Indonesia by statute. Iran and Lebanon are the only Islamic states that allow surrogacy (again under Ayatollah Khamenei's 1999 *fatwa*), with the remaining countries citing reasons for prohibition that are similar to the arguments against sperm and egg donation (Ashbahi and Mazkur, 1989, p. 167; Inhorn, 2005; Kholwadia, 2009, pp. 167–70; Mirza, 2004, p. 109; Serour, 2005, p. 187). In Indonesia, it is implicitly forbidden under Article 127 of Health Law No. 36/2009, which requires that fertilized embryos resulting from the union of gametes from a married couple must be implanted in the womb of the original donor (Yendi, 2011). Article 7d of the 2002 Indonesian Code of Ethics also prohibits surrogacy (Fakultas Kedokteran Universitas Sumatera Utara (Medical Faculty of the University of North Sumatra), 2006, p. 64). The MUI has similarly banned the practice, stating that it 'is forbidden. . .because this will lead to complicated problems with regard to heritage' (Purnama and Soaleh, 2009, p. 15).

For Indonesian couples that do attempt a surrogacy agreement, there is no legal enforcement mechanism for the couple desiring to keep the child. Indeed, Article 42 of Law No. 1/1974 and Article 250 of the Criminal Code suggest that the child resulting from surrogacy in Indonesia, regardless of the source of the gametes, is legally the child of the gestational mother and her husband, although the husband of the gestational mother can reject paternity through DNA or blood testing (Yendi, 2011). Although the Qur'anic justification for these legal rights is not documented in the legislation or other available sources, it is likely that the teaching in the Qur'anic verse 58:2 ('[n]one are their mothers except those who gave them birth') (Abbas and Atwell, 2009) is the motivation for imparting legal motherhood to the gestational mother (Kabir and az-Zubair, 2007, p. 608). The basis for the gestational mother's husband being the legal father is more uncertain, but possibly stems from the concept of '*al-walad li'l-firash*,' or the child being the product of the 'matrimonial bed' (Kabir and

az-Zubair, 2007, p. 605) where the gestational mother gave birth (Kabir and az-Zubair, 2007, p. 606).

Economic challenges affecting ART

Indonesia has high rates of infertility. In the 2002 Indonesian Demographic Health Survey, the World Health Organization found that 22% of married female respondents alone claimed to be infertile (Bennett, 2012). Factors cited for the nation's high infertility rates include pelvic inflammatory disease, often a result of untreated STI or poorly performed abortions, smoking, inadequate nutrition and environmental contamination (Bennett, 2012; Hanoum, 2012).

Indonesia currently has 16 centres that perform IVF and other ART procedures, all of which are based out of large public or private hospitals in major metropolitan areas (Nirmala, 2011). Indonesia's ART services are cheaper – in an absolute sense – than similar services elsewhere. At the Morula Clinic in Jakarta, one cycle of IVF costs around US\$6180 (Rp. 60 million) (Rulistia, 2013). By contrast, IVF treatment in Singapore can range between US\$7000 and \$11,000, and the same treatment in Australia costs around US\$10,000 (Samira, 2011). The director of the Morula Clinic argues that '[a]t Morula IVF, we have the same capability, procedures and technology (as other IVF services) at a more reasonable cost' (Samira, 2011).

While these costs may seem low compared with the cost of IVF worldwide, IVF is still prohibitively expensive for most residents of Indonesia (Bennett, 2012). Although in 2009 Indonesia's economy had the third fastest growth of all G20 countries, behind China and India, poverty in Indonesia remains a significant problem (IMF Survey Online, 2009; Indonesia's Poverty Line: To Make a Million People Unpoor, 2011). The absolute price of an ART cycle is deceptive, since it represents nearly three times the average annual household income of the poorest 80% of Indonesians (US\$2346) (Crabtree, 2013). For the wealthiest 20% of Indonesians, with an average annual household income of US\$8364, such a cost would still be enormous (Crabtree, 2013). Even in the USA, where an IVF cycle is approximately 20% of the median family income, treatment is considered prohibitively expensive for most couples (Nachtigall, 2006, p. 874). Moreover, success rates for IVF in Indonesian clinics range from 15 to 45% (Bennett, 2012), requiring many couples to undergo multiple rounds of IVF. Factoring in the average number of cycles to achieve pregnancy at any given age thus dramatically increases the cost of having a child. Finally, government-funded or private health insurance does not provide coverage for infertility treatments, forcing patients to pay out of their own pockets (Badan Penyelenggara Jaminan Sosial Ketenagakerjaan (Workers' Social Security Agency), 2014; Hidayah, 2012, p. 28; Jones et al., 2010; Nirmala, 2011). Even if insurance companies were to cover some aspects of infertility treatment, only half of the Indonesian population has health insurance (Joint Committee on Reducing Maternal and Neonatal Mortality in Indonesia, 2013, p. 80; World Bank, 2005a).

In the face of such widespread poverty in Indonesia, IVF in particular is limited to the wealthy in urban centres. The high relative cost of IVF treatment in Indonesia has affected utilization rates within the country. One physician, the head of the Indonesian IVF Forum, stated that 'few Indonesians were making use of [IVF] technology. That may be because of the

high cost and lack of insurance coverage for women seeking IVF' (Nirmala, 2011). Statistics from the Indonesian Association of Obstetricians and Gynecologists confirm that Indonesians have limited access to ART. One spokesperson for the association stated that millions of 'Indonesian couples will be experiencing fertility difficulties during their reproductive careers, and yet less than five percent of those couples will ever seek specialized medical treatment – including assisted reproductive technologies' (Bennett, 2012). In addition to the burden of cost, infertility treatment is limited to the country's major metropolitan areas, creating severely limited availability for more rural populations (Bayi Tabung (In-Vitro Fertilization), 2012; Central Intelligence Agency, 2014a; Jones et al., 2010; Nirmala, 2011; Samira, 2011; Sini, 1999; Yendi, 2011). Most specialists are attracted to work in urban areas – with the promise of financial gain through private practice – resulting in a 'mismatch between the geographic distribution of physicians and the perceived need for them' (Chomitz et al., 1998, p. 2; Nossal Institute for Global Health, 2011).

Because IVF is not covered by insurance in Indonesia, many couples would find it to be more cost-effective to transfer multiple embryos into a woman during one cycle. However, despite the expense of IVF in Indonesia and the fact that many couples cannot afford to undergo multiple rounds of IVF, Indonesian Ministry of Health guidelines have mandated an upper limit of four embryos that can be transferred per cycle. Under the 1999 decision made by the Indonesian Ministry of Health (No. 72/Menkes/Per/III/1999), typically no more than three embryos can be transferred into a woman's uterus during one cycle. Exceptions are made for transferring four embryos if several conditions are met: (i) the hospital has three levels of neonatal intensive care units; (ii) the couple has experienced two failed rounds of ART previously; and (iii) the wife is older than 35 (Yendi, 2011).

Most clinics in Indonesia place further restrictions on the number of embryos implanted per cycle of IVF, choosing to transfer only one or two as a part of clinic policy. Dr. Ita Fauzia Hanoum, a fertility specialist at the Permata Hati Infertility Clinic at Dr. Sardjito Hospital in Yogyakarta, Indonesia, argues that the successful transfer of three or more embryos can present significant health risks to mothers (Hanoum, 2012). Physicians at Permata Hati also base their policy on concerns about the ethical permissibility and clinical safety of selective abortions, which may be needed in the event that all three or four embryos successfully implant in the woman (Hanoum, 2012; Haryadi, 2012). Although transferring only one or two embryos at a time decreases the risks associated with multiple and premature births, it forces patients to undergo multiple cycles in the event of implantation failure (Practice Committee of the Society for Assisted Reproductive Technology, 2012, p. 837). Unfortunately, this limitation places an additional burden on couples who find even one cycle of IVF prohibitively expensive.

Patients are not the only ones facing financial problems. Many IVF clinics face limited funds and infrastructure problems, including frequent blackouts (McCawley, 2008). In some areas of Indonesia, in particular the island of Java, these blackouts occur daily (Prasodjo, 2012). Dr. Hanoum of the Permata Hati Infertility Clinic describes supply shortages and constant fears of electricity loss that would not happen in wealthier neighbouring countries (in particular, Singapore) (Hanoum, 2012). As fellow physician Dr. Dwi Haryadi explains,

unpredictable electricity makes the preferred 'slow-freezing' cryopreservation technique difficult, and risks the destruction of already frozen stored embryos (Haryadi, 2012).

At a national level, Indonesia faces challenges educating enough physicians to become infertility specialists. Already hampered by low government spending on health care (2.7% of GDP spent on health in 2011, ranking 181st in the world) and a shortage of health care providers (only 0.2 physicians per 1000 inhabitants, as opposed to 2.42 physicians per 1000 inhabitants in the USA) (Central Intelligence Agency, 2014a; Central Intelligence Agency, 2014b), many medical schools are unable to invest the resources into educating physicians in infertility treatment. As the head of the Indonesian IVF Forum explains, 'the lack of IVF specialists and medical schools that teach the method [of IVF] has impacted its development in the country' (Nirmala, 2011). Physicians are forced to travel to wealthy neighbouring countries such as Australia and Singapore in order to undergo specialist training in IVF usage (Hanoum, 2012).

Suggestions for reform

Indonesia's prohibition of egg, sperm and embryo donation and surrogacy reduces the number of men and women who can have children through ART and exacerbates the burden of infertility in the country. Prohibiting the use of donor gametes and surrogacy limits the effectiveness of ART procedures and restricts the number and types of couples who can achieve pregnancy through ART (American Pregnancy Association, 2014). Moreover, Indonesia's position on sperm, egg and embryo donation and surrogacy has harmful ramifications for homosexual couples and unmarried individuals in particular (Robertson, 2004, p. 333). Studies cited by the American Society for Reproductive Medicine, finding no evidence supporting concerns that children resulting from homosexual or unmarried partnerships experience related isolation, developmental problems or social stigmatization, have had little influence in Indonesia (Ethics Committee of the American Society for Reproductive Medicine, 2013, pp. 1525–6). Homosexuals in Indonesia are often unable to obtain legal documents and experience police brutality, harassment, arbitrary arrest, and even torture, rape and execution (International Gay and Lesbian Human Rights Commission, 2007). Similarly, women in Indonesia are expected to marry before having children. Women who experience premarital pregnancy frequently face stigma, physical, emotional and verbal abuse from their family and partners, along with poor marital prospects (Bennett, 2001). There is little chance that Indonesia will soon allow homosexual couples and unmarried individuals to access ART on the basis of equality and procreative liberty rights in the prevailing climate.

Moreover, it is unlikely that Indonesia will reform its policies on egg, sperm and embryo donation and surrogacy given the dominant belief within Sunni Islam of the impermissibility of these practices. On the one hand, it appears that these beliefs are not necessarily a foregone conclusion in Islam, as indicated by Iran and Lebanon's support for third-party donation and surrogacy after Ayatollah Khamenei's *fatwa* in 1999 permitting these practices (Inhorn, 2005). As Mohammad Jalal Abbasi-Shavazi et al. explain, the practice of individual reasoning (*ijtihad*) among leading religious scholars in Iran and

Lebanon's Shi'a Islamic communities 'has allowed a certain flexibility and pragmatism toward new technological developments, including IVF' (Abbasi-Shavazi et al., 2008, p. 5). Sunni Islam, in contrast, is characterized more by a literal understanding of religious texts than by religious authorities' personal interpretations of scripture, which has led the Sunni community to ban gamete donation (Abbasi-Shavazi et al., 2008).

On the other hand, third-party gamete donation and surrogacy continue to be controversial practices within these Shi'ite societies, and it is doubtful that Indonesia would turn to Shi'a Islam for moral guidance. In Iran, where third-party donation is officially endorsed, a number of Shi'ite religious authorities disagree with Ayatollah Khamenei's *fatwa* and continue to adhere to the Sunni prohibition against not only sperm donation (Serour, 2005, p. 187), but also embryo and egg donation (Inhorn, 2006, pp. 437–9) and by extension, surrogacy. Even if Shi'ite leaders were to support these procedures consistently, Shi'a Islam would probably not be considered a legitimate source of legal code in Indonesia. Shi'a Muslims are actively persecuted in Indonesia (Office of the United Nations High Commissioner for Human Rights, 2013) and their faith has been labelled by MUI leaders as 'heretical' (Agence France-Presse, 2012). Finally, Indonesian Sunni beliefs about third-party donation and surrogacy – and about single women and homosexual couples that are affected by these bans – are deeply held religious convictions. As such, it is important for the rest of the world to respect Indonesian religious leaders' rights to hold these opinions about the proper structure of a family unit and the ethical permissibility of new medical technologies.

The recent controversy over a very visible case of sperm donation in Indonesia illustrates the spectrum of views that dominate the Indonesian media about certain ART procedures. A full examination of the history of cultural representations of ART in Indonesia is outside the scope of this paper (see Bennett, 2012 for a perspective on the social construction of infertility in Indonesia), and no information is available on the particular cultural beliefs about third-party donation and surrogacy. The responses in the media to this sperm donation case are thus helpful to demonstrate the diverse public opinions surrounding more contentious ART procedures in the country. In late 2014, popular music star Julia Perez – already considered controversial by nature of her provocative style of *dangdut* performance (Vaswani, 2012) – spoke about her desire to obtain sperm donation abroad (Putri, 2014), although she ultimately did not undergo the procedure (Maulana, 2015). News articles widely report on the 'taboo' (Putri, 2014) nature of her desire and argue that if she went through with the procedure, it would show that she was 'confused' (Jika Ahmad Dhani Donor Sperma, Julia Perez "Galau", 2014). One article explains that if Perez were to have a child through sperm donation, he or she would be considered an 'illegitimate child. . . in the eyes of law and religion' (Wardhani, 2014). Fellow *dangdut* singer Ayu Ting Ting, however, publicly supported Perez's decision to seek a sperm donor, stating that her 'intention is right' (Ayu Ting Ting Dukung Jupe Jalani Program Tanam Sperma, 2014).

While most articles reporting on the story condemn Perez's decision and point to its inappropriate status in Islam, one could interpret her public campaign to obtain sperm donation as a signal of changing customs in Indonesia. Even in the

absence of visible public movements to promote acceptance of third-party gamete donation and surrogacy, there are individuals from Indonesia like Perez who travel to other countries where these practices are allowed. No data are available on the number of Indonesians who engage in travel abroad to undergo these procedures, but one Public Radio International article mentions briefly that Iran attracts patients from Indonesia (Tong, 2014). Perez's case reveals the range of beliefs surrounding ART in Indonesia and suggests that even if Indonesian Sunni scholars were to issue a *fatwa* supporting third-party donation and surrogacy, it is unclear at this time whether the public would be willing to accept it.

Despite the diverse views on ART informed by religious and economic realities within Indonesia, it is possible to contemplate a meaningful set of reforms. Ideally, Indonesia would reform its health insurance policy to cover all aspects of infertility treatment. Infertility has large ramifications on the lives of patients, including stigmatization, depression, low self-esteem, anxiety, and a loss of familial support and work contribution in largely agrarian societies (Akande, 2008, p. 12; Fleetwood and Campo-Engelstein, 2010, pp. 6–7; Makuch et al., 2011, pp. 2054–5). At the same time, recommending that Indonesia allocate substantial resources to cover all expensive ART procedures may not be feasible or even ideal given the current economic conditions in the country. These costs would not be insignificant for Indonesia, a country that is already struggling to build its economy and alleviate widespread poverty, and studies suggest the government may not yet be ready to fully fund ART procedures under a national insurance plan (Akande, 2008; Sperling, 2010).

Directing public funds towards covering all forms of ART may also not be the best use of already overburdened health care funds and infrastructure (Central Intelligence Agency, 2014a; Okonofua, 1996, p. 959). Inequality is rampant in the area of health, both in terms of income levels and regionalization. Infant mortality rates among the poor are over two times higher than rates in the highest income bracket. The infant mortality rate in East Nusa Tenggara is 57 per 1000 live births, nearly three times that of Yogyakarta Province in Java. Less than 10% of poor families in Papua have access to clean water, compared with two-thirds of poor families in Bali and Java (United Nations Children's Fund Indonesia, 1999). Indonesia also has a massive shortage of hospital facilities nationwide, with an estimated six hospital beds per 10,000 persons in 2010 (Central Intelligence Agency, 2014a). Health care funds may be better spent improving the country's basic health indicators rather than focusing on coverage for ART.

Nevertheless, there are several intermediate options that would allow more infertile couples in Indonesia to obtain ART without taking resources away from already minimal health care dollars and that work within the country's religious norms. One attractive alternative recommended by the World Health Organization is to develop low-cost methods of ART that are frequently overlooked in developing countries (Makuch et al., 2011, p. 2055). For example, expensive ovarian stimulant drugs could be forgone in favour of 'natural-cycle' IVF, where no hormonal stimulants are used (Shahin, 2007). Clinics could also attempt vaginal culture, in which oocytes are fertilized inside a capsule inserted into the female patient's vagina (Sterzik et al., 1989). This eliminates the need for an incubator and results in similar pregnancy rates as conventional approaches to IVF (Sterzik et al., 1989).

The Indonesian Government could also address infertility by bolstering programmes that focus on preventing infertility from the start. Since most of Indonesia's infertility is caused by pelvic infections resulting from STIs, promoting STI awareness and treatment at government clinics could help considerably with reducing levels of infertility (Okonofua, 1996, p. 959). In the *British Journal of Obstetrics and Gynecology*, Okonofua argues that resources may be better directed towards preventative reproductive health programmes, as these programmes 'will be less expensive, will benefit the greater number of people and will be more effective in eliminating the social consequences of infertility' (Okonofua, 1996, p. 959). Moreover, services aimed at preventing infertility could have positive wide-ranging effects on other areas of women's health, including HIV/AIDS prevention and lower infant and maternal mortality rates (Okonofua, 1996, pp. 959–60). Indonesia can incorporate STI education and treatment into its already popular family planning movement, focusing in particular on condom usage (Permana and Westoff, 1999). The country should also consider STI surveillance, education about STIs in schools and among sex workers, and better training for physicians in how to recognize and manage these infections (World Bank, 2005b).

Conclusion

The full impact of such reforms would be difficult to predict. This case study of Indonesia reveals that religious norms and economic pressures can shape the clinical practice of ART to a greater extent than formal legislation. Indonesia's legislation on ART provides no explicit prohibition against third-party donation, yet all clinics in Indonesia refuse to practice egg and sperm donation. Moreover, fertility clinics have developed their own ART policies that are more restrictive than required by law; for example, clinics generally limit embryo transfers to only one or two embryos per cycle as a result of medical considerations and Islamic norms prohibiting multifetal pregnancy reduction. Recognizing that Indonesian religious values shape ART clinical practice more effectively than do formal laws reveals that reforming ART policy may demand more than simply creating new legislation. Religious attitudes must shift organically to allow practices such as third-party donation and homosexual or unmarried parenthood. Before these long-term religious and economic shifts take place, however, there is much that Indonesia can do to improve overall access to ART and to ensure more equitable distribution of services. By developing cheaper methods of ART and promoting STI prevention and detection, Indonesia can begin to reduce the prevalence of infertility within its borders.

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