

Potentials of (Re)Birth

In part 2 of this book, we aim to identify Jain perspectives on the bioethical dilemmas of birth, life, and death. Since Jain primary texts rarely address any of these dilemmas specifically, we draw upon four sources to identify various insights, competing values, and provisional principles of application for engaging with contemporary bioethical issues. First, we examine Jain canonical and postcanonical texts, varying from mendicant and lay manuals to narratives and medical treatises. Second, we look to modern lay Jains and Jain studies scholars who interpret traditional sources for new ethical situations, and to modern scholars of Indian medicine whose work provides comparative and historical context for the Jain view. Third, we utilize data gathered from a survey we conducted in 2017–18 of international Jain medical professionals, described in the next section. Fourth, where available, we examine the views of contemporary Jain mendicants through their personal writing, interviews, and academic anthropological accounts.

Throughout part 2, we also engage aspects of Western bioethics to provide a frame for understanding contemporary issues in their evolving contexts. This variously includes definitions, key terms, legal precedents, philosophical commitments of other religious communities, and, to a lesser extent, Western normative ethical theories that feature in bioethics debates such as deontology and utilitarianism, among others. Our aim is not to equate Jainism with any term, precedent, or ethical theory. On the contrary, Jain foundational principles or perspectives rarely align easily with any singular view. For that reason, we identify a plurality of positions and concepts to illuminate what is at stake in current debates and where Jainism may resonate, diverge, or raise alternate questions. Although there is no single Jain view on any of the ethical challenges herein, we identify five provisional Jain principles of application for reproductive ethics at the end of the chapter.

SURVEY OF JAIN MEDICAL PROFESSIONALS,
2017–2018: DESIGN AND METHODOLOGY

Today, Jains are firmly entrenched in modern medicine. Although they constitute less than 1 percent of the Indian population, the National Health Portal of India lists over two hundred Jain-sponsored hospitals and clinics in India.¹ There are at least twenty-five Jain medical colleges, and the Jain Medical Doctors Association of India has a partial directory of some 23,400 Jain physicians.² Jain medical professionals are also a visible part of the global diaspora. Many Jains came to the United States through the 1965 Immigration Act, which favored those with advanced training in science, engineering, and medicine. Consequently, the estimated one hundred thousand Jains living in the United States³ have high representation in medical fields. As of 2017, the Federation of Jain Associations in North America (JAINA) reported a directory of about six hundred Jain medical professionals.⁴

Given the high number of Jains who work in medical fields, we designed an online survey titled “Foundations for Bioethics in the Jain Tradition.” We vetted this survey with two Jain physicians to clarify language and modify any question for accuracy. During spring 2017, after ethics review, we solicited the help of Jain medical professionals involved with JAINA, several medical associations in India, and Jain physicians and researchers in the private sector in order to disseminate the survey through email, along with a two-minute introductory video.⁵ The survey included 130 multiple-choice and open-ended questions related to demographics (17 questions), professional and religious identity (32 questions), ethical reflection (69 questions), and Jain religious education (12 questions). The survey was open from mid-July through mid-September 2017 on the Qualtrics platform of Rice University in Houston, Texas.

Our data include survey answers from a total of 48 respondents. Of these, 35 completed the entire survey, and 13 answered at least 10 percent or more of the survey, meaning that 35–48 participants interacted with each question. The gender ratio was 19 female to 29 male. The ages, places of birth, and countries of residence for participants were as follows:⁶

Age ($n = 48$)

- 18–23 (8%)
- 24–29 (8%)
- 30–39 (8%)
- 40–49 (21%)
- 50–59 (15%)
- 60–69 (19%)
- 70–79 (17%)
- 80–89 (4%)

Birth country ($n = 48$)

- India (58%)
- United States (19%)

Kenya (13%)
 United Kingdom (4%)
 Tanzania (4%)
 Canada (2%)

Country of residence ($n = 48$)

United States (67%)
 United Kingdom (8%)
 India (8%)
 Kenya (8%)
 Canada (6%)
 Australia (2%)

Most of the respondents selected a sect affiliation, with the majority identifying as Śvetāmbara (73%, $n = 48$), with the subsects Mūrtipūjaka/Mandir Mārgī (51%, $n = 35$), Sthānakavāsī (29%), Bāis Sampradāya (3%), and Śvetāmbara Terāpanthī (6%). A smaller minority identified as Digambara (25%, $n = 48$), with the subsects Bisapanthī (25%, $n = 12$) and Digambara Terāpanthī (17%). Additional respondents identified themselves with two different sect identities (6%, $n = 48$) or as followers of Śrīmad Rājacandra (6%). Respondents reported their education levels as MD (56%, $n = 48$), PhD (4%), master's degree (13%), four-year college (17%), high school (4%), or other (6%).⁷

The majority of participants had attended Jain temple education (*pāṭhaśālā*) (75%, $n = 36$) in the United States, India, or their birth country, for 0–1 year (21%, $n = 28$), 1–3 years (11%), 3–5 years (36%), 5–7 years (14%), or 7 years or more (18%).⁸ A considerable percentage of respondents had also taught in *pāṭhaśālā* (39%, $n = 36$), and a significant number were currently attending adult *pāṭhaśālā* classes (17%, $n = 36$) or teaching classes (22%, $n = 36$). In addition to their involvement with Jain temple education, many respondents had served in a leadership position with a Jain-related organization such as JAINA, Young Jains of America, Young Jains of Nairobi, Young Jain Professionals, Jain Vegans, their own temple board, or similar groups (42%, $n = 36$), demonstrating both exposure to Jain values and investment in the community's continuity. We have integrated these survey responses throughout this and the next two chapters to deepen our analysis of what constitutes a Jain response to bioethical dilemmas.

BIRTH AS REBIRTH

As detailed in chapter 2, in Jain philosophy an individual birth (*janman*) is always a *rebirth* (*punar-bhava*), one of many transformations that an individual *jīva* will undergo on its karmic path.⁹ Rebirth signifies the start of life in a new bodily form, but not the beginning of life itself. As Christopher Chapple suggests: “The question for Jainism is not who created life; life has always been present and can never be destroyed. The question for Jainism is how to advance the *jīva* toward a state of

liberation through the gradual release of all karmas” (2013, 83). Consequently, the moment of birth is one significant event in a much longer trajectory. Furthermore, as discussed in chapter 2, a particular embodiment is not determined at birth but rather at the moment when longevity-determining karma (*āyu-karman*) binds in the previous life, establishing the forthcoming life span and the birth state to come (Wiley 2000a, 41–47). Past, present, and future lives are thus intricately connected.

Jain texts locate human beings in the viviparous-with-placenta (*jarāyu*) class of living beings born in a womb (*garbhaja*) (see chapter 2). Being born as an embryo (*garbha*) in a womb had spiritual and biological significance throughout Indian religious and medical traditions. In addition to being addressed in classical āyurvedic texts such as the *Caraka-saṃhitā* and *Suśruta-saṃhitā*, specific treatises such as the Vedic *Garbha-upaniṣad* and the Buddhist *Garbhāvākraṇṭi-sūtra* focus on conception, gestation, and embryology (Kritzer 2009). The Jain medical texts *Taṇḍula-vaicārika* and *Kalyāṇa-kāraka*, introduced in chapter 4, include sections on embryology and conception. Jain embryology reflects wider trends within traditional Indian medicine, which, according to Zwilling and Sweet, “combines philosophical and metaphysical speculation with empirical observation” (1993, 592). The Jain medical treatises, for instance, offer a biological account of the embryo that often depends upon particular notions of karma, cosmology, purity, and well-being. Conversely, Jain texts that are more concerned with philosophy, karma, and cosmology also include references to biological knowledge and physiological processes of conception and birth.

CONCEPTION, EMBRYOLOGY, AND FETAL LIFE IN THE JAIN TRADITION

As detailed in chapter 2, Jain texts describe the births of various living beings as occurring either through agglutination, through the womb, or “by descent” (TS^{Dig} 2.31–35¹⁰). Whatever the mode, birth is understood as leading to inevitable suffering, death, and possible rebirth in an even more detrimental existence. Intercourse is believed to harm living beings, as we will discuss below, and requires damaging attachments to women who enable birth (YŚ 2.87), and to sexuality that undermines the mendicant path of vigilance over the passions. As stated in chapter 3, passions are one of the five primary causes of karmic bondage, and a prerequisite for the three causes of carelessness, nonrestraint, and wrong worldview. Conceiving a child thus contributes to the persistence of passions that generate violence, guaranteeing more rounds of rebirth. At the same time, the Jain tradition has viewed birth as a positive occasion for women, families, and society—especially the birth of a Jina. Conception and birth represent two of the five auspicious events (*kalyāṇaka*) in the life of a Jina, the other three being renunciation, achieving omniscience, and liberation. These events are sometimes reenacted by Jains during festivals and temple consecrations.¹¹

Conception in the Womb

Contrary to certain Buddhist¹² or Hindu notions of an intermediate period between life and death, Jain texts insist that the *jīva* starts a new embodied existence almost immediately after the death of its previous form. Umāsvāti explains this transition as lasting a minimum of one moment (*samaya*)¹³ to a maximum of four moments, propelled by karma in a straight line or with up to three turns (TS^{Dig} 2.25–29;¹⁴ also BhS 1.7§85b). Juxtapose this with a Hindu view expressed in the *Chāndogya-upaniṣad*, in which potential life, after an indeterminate waiting period in the “realm of the fathers” (*pitṛ-loka*) and beyond, due to karma, becomes mist, then cloud, and then rain, before being absorbed in plant life; only after these plants are eaten by a male individual and later emitted as semen can a life be reborn (ChU 5.10.3–6). Padmanabh Jaini clarifies how this Upaniṣadic view clashes with Jain cosmology, which does not accept other life-forms as mere instruments: “For the Jainas . . . it is possible for a soul to be *reborn* as a ‘water body’ (*āp-kāyika*) or as a plant (*vanaspati-kāyika*), but not for these latter entities to function simply as insentient props in the life of a soul on its way to a human existence” (2010b, 125).

As noted in chapter 2, it is unclear how the embryo enters the body of the mother-to-be (Jaini 2010b, 124), but Jain texts typically depict human births as being a result of real sex acts, (*maithuna*, *maithuna-vṛttika*) (BhS 2.5§133b; SthS 3.1.10).¹⁵ Jain medical manuals share the wider Indian medical view that a child is conceived when fluid from the father, commonly understood to be semen (*śukra*, *bija*), mixes with the mother’s fluid (*rasa*, *śoṇita*), variously described as blood, menstrual fluid, or another undefined procreative substance.¹⁶ Classical Indian medical texts, as well as Jain mendicant and medical texts, describe these two fluids uniting with a third vital element—that of *jīva*—to form the living embryo at the moment of conception (KK 2.47; TV 11–15, p. 5,1–3, p. 5,6–12; cf. Das 2003, 4, fn. 6).¹⁷ The semen present in the uterus retains the potential to form an embryo from a time range of less than one *muhūrta* (forty-eight minutes) to a maximum of twelve *muhūrtas*, or approximately ten hours (BhS 2.5§133a).¹⁸

The chances of conception are further limited by the potentiality of the female fluid and the fertility of the couple.¹⁹ Following the *Tanḍula-vaicārika* 9–15, Colette Caillat describes the female anatomy and its mechanism of releasing “drops of blood” through menstruation, and addresses male and female fertility:

All the drops that reach the uterus, mixed with sperm, are able to be born in the form of “lives”: up to 900,000;²⁰ but they are sterile after twelve *muhuttas* [Skt. *muhūrtas*]. Man’s sperm remains active for the same period of twelve *muhuttas*; and a child can have up to ninety fathers. On our continent, a woman is no longer fertile after fifty-five years, a man after seventy-five years. (Caillat 2019, 4–5)

A child’s temperament, health, and sex are also determined during conception. The condition of a child is said to be determined by the karma it has accumulated throughout its previous lives (BhS 1.7§86b). The *Kalyāṇa-kāraka* states that

whichever one of the three “humors”—wind, bile, or phlegm—is dominant at the time of conception informs a child’s character disposition and general health (KK 3.18–27; see chapter 4). The sex (*liṅga*) of the child is determined, in part, by the quantities of the parental fluids at conception. More of the father’s fluid leads to a male (*puṃ-liṅga*) child; more maternal fluid leads to a female (*strī-liṅga*) child; equal portions result in a child that is neither male nor female, sometimes referred to as “third sex” (*napuṃsaka-liṅga*) (TV 22–23; Das 2003, 3–4; Jaini 1991a, 11–12; Sethi 2012, 71–74; Zwilling and Sweet 1996, 362–63, fn. 16).²¹ The sex of the child is also influenced by the karma of the embryo, as noted in chapter 2, and is related to the womb position: a male embryo is on the right side of the uterus, a female on the left, and a third-sex embryo in the middle (Schubring 2000/1962, 142; TV 16).

The *Kalyāṇa-kāraka* describes disciplines for menstruation and intercourse that the mother should follow to ensure conception—what to wear, where to sleep, and rules for not speaking or committing violence (KK 2.42). Sex is permitted and prohibited on certain days, and the text also describes an accompanying ritual to ensure conception (*garbha-ādhāna*) (KK 2.43–47). For example, the fourth day of menstruation is proper for intercourse after bathing and eating certain foods or medicinal substances to increase virility (*vāji-karaṇa*). In keeping with prevailing Indian medical wisdom of that period, after intercourse the mother is to lie on her left side for a female child or on her right side for a male. This reflects the positions of the different sexes in the womb mentioned above.

The embryo’s first food within the womb is the fluid of the mother, the fluid of the father, or a combination of the two (SKS 2.3.21).²² These substances are considered impure (*kaluṣa*) and offensive (*kilbiṣa*) (Wiley 2000a, 191; TV p. 5,1–3). At the same time, early nourishment enables the growth of structures and limbs (*piṇḍa*), with matter transformed from the mother’s fluid contributing flesh, blood, and brain, and matter transformed from the father’s fluid contributing bones, marrow, hair, and nails. These parental contributions are said to stay with the child’s body until its death (BhS 1.7§86b).²³

Embryonic Development and Maternal Connection

Jain texts understand a nine-month gestation period for human beings born in a womb (TV p. 6,31),²⁴ and they mostly agree on the details regarding human bodily development (Wiley 2000a, 190). The *Taṇḍula-vaicārika* and the *Kalyāṇa-kāraka* describe a child’s growth as proceeding from a thick liquid form (*kalala*; seven days after conception) to a long round mass (*arbuda*; seven days after *kalala*), then to flesh-like and solid forms (*peśin* and *ghana*) until becoming a fully developed fetus (KK 2.53–57; TV 17, p. 5,6–12; Sikdar 1974, 240; Wiley 2000a, 192). During this developmental period, the texts describe how the *jīva* begins to attract various material particles to construct its body, sense organs, and respiratory organs, as well as the organs of speech and mind. Some human beings possess the ability to fulfill this process of bodily development (*paryāpta*), whereas others lack

this ability (*aparyāpta*) and die soon after rebirth, a distinction to which we will return below in relation to genomic editing (Babb 1996, 200, fn. 36; Wiley 2000a, 128–30) (see also chapter 2).

In relation to the bioethical issues we will examine, it is important to note that a nascent human embryo possesses all five sense faculties (*bhāva-indriya*) that precede and correlate with the sense organs (*dravya-indriya*) that develop with the principal body (BhS 1.7§86b; see chapter 2).²⁵ The first sense organ to develop is that of touch, perhaps because it takes the longest to develop, followed by organs of taste, smell, hearing, and sight (Wiley 2000a, 178).

After the embryo's initial diet of fluids from both parents, when it is said to absorb food with its entire body, bodily construction takes place by taking nutrients from whatever food the mother ingests (BhS 1.7§86b; TV p. 5,27–29). The *Kalyāṇa-kāraṇa* prescribes the mother's diet for different stages of pregnancy, including fruit, milk, vegetables, grains, butter with rice, as well as certain medicinal drinks (*kaṣāya*) made from plants and bark, mixed with ghee, curd, and milk (KK 23.22–24). Since the embryo has no excretion during this time, food helps grow the body and the physical sense organs (BhS 1.7§86b; TV p. 5,11–14).

Jains share the view called “double-heartedness” (*dvai-hṛdaya*), according to which nutrients are transferred to the fetus by way of the “two threads”—possibly akin to umbilical connections—that develop around the third month of gestation. One of these threads leads from mother to fetus (*mātr-jīva-rasa-haraṇi*; lit. “liquid vessel of the mother's *jīva*”) and another from fetus to mother (*putra-jīva-rasa-haraṇi*; lit. “liquid vessel of the child's *jīva*”) (BhS 1.7§86b; Cailat 2018, 7–10; Kritzer 2008, 75; Schubring 2000/1962, 141). Through these two threads, the pregnant woman (*garbhīṇī*) influences her child's bodily development through what she eats. The *Taṇḍula-vaicārika* also states that the two threads permit the fetus to feel and influence its mother's cravings in the third month and cause the mother's body to swell in the fourth month (TV p. 5,7). Such pregnancy cravings (*dohada*)²⁶ can be positive or harmful, often appearing in Jain narratives to teach about karma, to explain seemingly unjust suffering, and to reflect relational concerns between women, maternal roles, husbands, family, and society, as is evident in the Jain narrative on abortion below (Bauer 1998, 256–57).

Auspicious Embryos in Utero

Jain narratives depict an especially strong connection between a mother and the embryo of an important figure such as a Jina or a universal emperor (*cakravartin*). These stories are found in Śvetāmbara canonical texts such as the *Ācārāṅga*-, *Bhagavatī*-, and *Kalpa-sūtra*, among others. Later, postcanonical biographies in the Jain genre of “universal history” embellish the stories further, detailing the lives of one or all of the sixty-three great persons (*śalākā-puruṣa*) born in each progressive and regressive half-cycle of time (see chapter 2). Purāṇic texts, for example, pay special attention to their last incarnation and the unexpected ways that past karma

ripens over numerous lives (Cort 1993, 188–89). This includes animated accounts of Jain heroes in the womb.

The life of Mahāvīra, the twenty-fourth Jina, begins with an especially lively gestation. In the Śvetāmbara canon, Mahāvīra descends from the heavenly world, taking the form of an embryo in the womb of Devānandā, the wife of a Brahmin, while she is asleep (KS 2.2). The account avoids any mention of the impurities of conception described elsewhere. Like all mothers of Jinas, Devānandā experiences fourteen auspicious dreams.²⁷ During Devānandā's pregnancy, Indra, the king of one of the heavens in the Jain cosmos, realizes that Mahāvīra—who was destined to be a great spiritual hero—had incorrectly descended into the womb of a Brahmin woman when warriors, including Jinas as “spiritual warriors,” could only be born from the Kṣatriya stratum of society.²⁸ Indra calls upon Hariṇegameśī,²⁹ a leader of Indra's heavenly army, to gently transfer the embryo of Mahāvīra by hand from Devānandā, exchanging it with an embryo in the womb of a Kṣatriya woman named Triśalā.³⁰ The extreme care of this embryo transfer, recorded in the *Kalpa-*, *Bhagavatī-*, and *Ācārāṅga-sūtra*, is complete on the eighty-third day of gestation when Triśalā has the same fourteen dreams (KS 2.30, 3.32–46; BhS 5.4§218a).³¹

In these stories, the Mahāvīra-to-be-embryo has special knowledge of entering the wombs of both Devānandā and Triśalā (KS 2.3, 2.29; ĀS 2.15.3–5). He causes his mother no pain, increases her beauty, and is sensitive to her feelings, quivering when she fears he may be dead, and, according to Śvetāmbaras, takes his first vow within the womb not to become a monk until after his parents' deaths (KS 4.92–94). Beyond these insights, the fetus brings wealth to his family (Mahāvīra's birth name is Vardhamāna, meaning “increase/prosperity”) and inspires his father, the king, to set prisoners free, cancel debts, lighten taxes, clean the city, forgo arrests, and invite all artists, musicians, and marginalized citizens to a ten-day celebration (ĀS 2.15.10–12; KS 4.90–91, 5.102–9).

In her analysis of Jain heroes *in utero* in the Purāṇas,³² Eva De Clercq describes these events as the “Jina life blueprint,” including dreams, the transformation of the mother (though the father is also affected, as noted above), and a series of supernatural events that reflect the status of the hero (2009, 51–52). She highlights elements of these stories that distance the conception, gestation, and birth from sexuality, as well as the embryo transfer. She discusses instances of pregnancy cravings, mentioned above, but also argues that despite the “double-hearted” threads between the mother and the child,³³ the mother is primarily an expression of her child's Jina-hood and a passive recipient of his one-directional influence (44–45). Other scholars, however, assert that the mothers of Jinas are counted as Jain heroes in their own right (Sethi 2009, 47–48).³⁴

The Digambara tradition does not accept the embryo transfer as valid and understands Triśalā to be Mahāvīra's only mother. Digambaras also reject the first vow being made in the womb, asserting that Mahāvīra committed to mendicancy as an adult and renounced the worldly life while his parents were still alive, only

after seeking their approval. Such variations notwithstanding, these epic stories of auspicious embryos add another layer to the diverse Jain sources of conception and fetal life by which we might approach modern issues in reproductive ethics—especially taking, facilitating, and altering nascent life—to which we now turn.

TAKING AND PREVENTING NASCENT LIFE: JAIN VIEWS ON ABORTION, POPULATION CONTROL, AND CONTRACEPTION

We begin with the question of taking and preventing life through abortion, population control, and contraception. Jain texts either do not address these questions specifically or address them in no great detail. The death of nascent human life is described as a particular kind of death called *avyakta-bāla-maraṇa*—or “death of the undeveloped” (Settar 2017/1990, 10). Certain stories attempt to account for the difficult experience of pregnancy not coming to term. The *Bhagavati-sūtra* asserts that the right posture for the fetus to emerge from the womb is by the head or feet, but if it is born side-first, it will die (BhS 1.7§86b; TV p. 7,1–2). The *Kalyāṇa-kāraka* acknowledges the possibility of miscarriage if a woman does not follow prescribed preparations for pregnancy (KK 2.46–47; Patil et al. 2015, 147). The *Taṇḍula-vaicārika* states that if maternal fluid (*ojas*) condenses, a mass (*bimba*) is born (TV 23, p. 6,33–34), which Walther Schubring interprets as a result of a miscarriage (2000/1962, 142). Jain narratives sometimes depict mothers beseeching guardian deities to protect against miscarriage (Bauer 1998, 58), and, as mentioned above, the *Kalpa-sūtra* states that Mahāvīra quivered in the womb to assuage his mother’s fear that he had died (KS 4.92–93). However, all these occurrences are unintentional; and we will discuss the intentional termination of nascent life shortly.

It is important to highlight that Jain texts warn about the processes and motivations of producing new life. As noted in chapter 2, sex (*maithuna*) is deemed one of the four instincts (*saṃjñā*) that define embodied life, fuel the passions, and thus maintain karmic bondage (Jaini 2010e, 284). In the male mendicant context, women are also seen as a perpetual source of delusion and karmic attachment because of their erotic allure (Sethi 2012, 51–86; YŚ 2.82–102). Consequently, celibacy, or *brahmacarya*, as one of the five great vows, allows monks and nuns to assiduously avoid the attachments that lead to the desire for procreation in the first place.

Even in the textual guidelines for laity that accommodate social norms of child-bearing, procreation is not neutral. The Digambara mendicant Amṛtacandrasūri (c. tenth century) describes multiple living beings killed in the vagina³⁵ due to the friction of intercourse, comparing it to a hot iron rod being inserted into a tube filled with sesame seeds, which it burns up (PSU 107–9; Wiley 2000a, 140–41); and, as indicated earlier, texts suggest that sex can “create” and “destroy” up to nine hundred thousand progeny (TV 12; cf. Wiley 2000a, 139–40).³⁶ The minor

vow of *brahmacarya* for lay Jains requires sexual restraint, often interpreted as monogamy, or as celibacy for particular durations. The *Kalyāṇa-kāraka*, for example, prescribes celibacy for lay Jains on certain days depending on hot and cold weather, during menstruation, and the eighth and fourteenth days of the lunar fortnight, when other ritual fasts are also prescribed (Patil et al. 2015, 143–44).

Abortion

Jain texts describe rare examples of abortion utilizing various methods. The canonical *Vipāka-sūtra* tells the story of the wicked governor Ikkāi, who is reborn as the fetus Miyāputta in the womb of queen Miyādevī. Afflicted with great pain during the pregnancy, which also repels her husband, the queen tries unsuccessfully to abort the fetus by means of ingesting several salty, bitter, and astringent substances; Miyāputta is later born with severe physical and mental defects and nearly killed by infanticide before being rescued by his father (Bauer 1998, 245–48; Bollée 2003–2004, 182–83).³⁷

The canonical *Nirayāvalī* (Pkt. *Nirayāvaliyāo*)³⁸ describes the attempted abortion of Kūṇika by his mother Celanā, a co-wife of King Śreṇika. During the third month of pregnancy, Celanā experiences pregnancy cravings (*dohada*) to eat her husband's flesh of the belly, baked, fried, and roasted. Unable to fulfill this craving, Celanā grows emaciated until her husband, with the aid of another son, devises a plan to pass off flesh and blood from the slaughterhouse as those of the king (NS 1.1.22–29). After eating them, Celanā is overcome with disgust that her unborn child had indirectly ingested his father's flesh and tries unsuccessfully to abort Kūṇika “by various means of ejecting, abortion, dropping and destroying” (NS 1.1.30, trans. Gopani and Chokshi). When Kūṇika is born, Celanā tries to leave him in a solitary place to die, but his father rescues him. Although—unlike Miyāputta—Kūṇika was born with a beautiful form, he later imprisoned his father, King Śreṇika, and took over the throne, which resulted in King Śreṇika's suicide (NS 1.1.31–39).

These two narratives illuminate various methods of abortion, including manual procedures and eating or drinking different medicinal tonics (Jain 1996, 549). They also offer distinct explanations for the attempted abortion and later results. In the first story, Ikkāi's karma is fulfilled as Miyāputta's embryo, including the painful pregnancy, attempted abortion, and subsequent deformity. In the second story, the inauspicious pregnancy cravings of Celanā, though deceptively fulfilled, seem to impact the character of Kūṇika (543–44). Before turning to current Jain views on abortion, it is important to have a greater understanding of the topic within contemporary medical and bioethical contexts.

Contemporary Bioethical Debates on Abortion. To understand the contemporary issue of abortion, one must consider the various reasons why a woman may seek abortion, appreciate the stages of pregnancy in which different forms of abortion can occur, and consider the bioethical arguments for and against abortion.

Ethicists explore several reasons why a woman may seek an abortion. In extreme cases, carrying a fetus to term may result in the mother's own death. At the other extreme, carrying a fetus to term may obstruct a woman's personal, relational, or vocational satisfaction. In between these poles, a woman might seek abortion because pregnancy may threaten her own mental or physical well-being, produce a child with severe impairments, subject her to social stigma due to being unmarried, or cause an undue financial burden for her or her family; a woman may also seek abortion if the pregnancy is the result of rape or incest (DeGrazia et al. 2010, 456).

Abortions can be performed at different stages and by different means. For example, nonsurgical medical abortion, first available in France and China in the 1980s, utilizes a pill taken in the first ten weeks of pregnancy.³⁹ These pills are now widely available in certain countries through clinics and online sources (Aiken et al. 2017).⁴⁰ Surgical abortions depend on the stage of development. Vacuum aspiration involves removing the contents of the uterus with a vacuum syringe or suction tube and can be performed from six to sixteen weeks. Dilation and evacuation (D&E) is performed after sixteen weeks of gestation; a surgical curette and forceps are used to scrape out the lining of the uterus and remove any larger fetal remains, followed by suction. Abortion can also be performed by inducing labor.

Modern debates over abortion typically involve disputes over (1) at what point in reproduction an individual life begins or attains "personhood"; and (2) at what point in fetal development, if any, and for what reasons, an abortion can be considered morally or ethically justified.

Regarding the beginning of life, there is no scientific consensus. Current biological perspectives place the start of life at various stages from fertilization of the egg, to gastrulation (when the blastocyst begins to establish distinct cell lineages), to birth, and even later. Philosophical bioethics typically consider the following possible stages:

- conception/fertilization* (when sperm joins egg)
- implantation* (when zygote implants into uterine wall)
- quickening* (when fetus starts to move)
- viability* (when fetus can live outside womb independently or with life-sustaining treatments/technologies)

Several religious bioethical views identify origin of life and/or personhood as significant markers that impact the morality of abortion. Pope John Paul II, for example, in a 1995 encyclical titled "Evangelium Vitae" (The Gospel of Life), stated the Catholic Church's formal position that individual existence begins at conception (John Paul II 1995). Jewish law diversely assigns "humanness" to a fetus at or after birth, though a pre-birth embryo/fetus still has great value as a "potential" human (Schenker 2008, 273). In his comparative analysis of Jewish and Catholic bioethics, Aaron Mackler helpfully explains how formal positions in each tradition coexist with diverse interpretations and applications by ethicists and practitioners (2003).

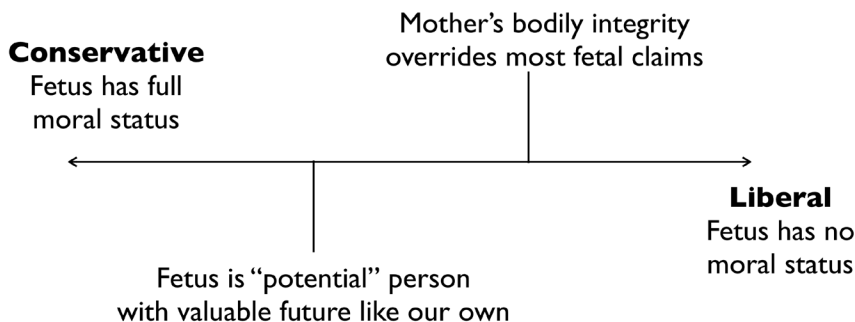


FIGURE 5. Basic continuum of contemporary abortion debates with two examples of intermediate positions. Credit: B. Donaldson (adapted from DeGrazia et al. 2010).

Likewise, the Islamic view is varied, ranging from ensoulment of the fetus at 120 days to divine involvement at every stage of development (Brockopp 2003, 24).

Regarding the point of whether abortion may ever be justified and for what reason, DeGrazia et al. present two corners of the debate. On one end, the oft-called “conservative” view assigns full moral status (or “personhood”) to the embryo/fetus and demands ethical consideration equal to that of a fully developed adult (2010, 458). This is the formal position of the Catholic Church, articulated by Pope John Paul II, declaring abortion to be an “unspeakable crime . . . [of] deliberate and direct killing” of an absolutely innocent human person (1995). On the other end is the “liberal”-labeled view, which denies any moral status to an embryo/fetus. Feminist ethicist Mary Anne Warren defends this position by claiming that a fetus can only be considered “human” in the *biological* sense of species; to be a human person in the *moral* sense requires that a being possess *at least one* of the following traits: consciousness of objects and pain, reasoning, self-motivated activity, capacity to communicate, and self-awareness (2010, 469–70). There are a variety of intermediate positions, including affirming a fetus as a “potential person” with a valuable future or privileging a mother’s right to bodily integrity over most fetal claims (Marquis 2010, 477; Jarvis Thomson 2010, 480–83). We map this continuum in figure 5.

Current Jain Perspectives on Abortion. Jain approaches to abortion do not easily map onto this sort of continuum. Few statements exist from contemporary mendicants on the topic of abortion. In a rare video interview, the current Bhaṭṭāraka Cārūkīrti in Mūḍbidrī, Karnataka, who holds one of ten Digambara mendicant seats of authority in south India, engaged with several bioethical issues, including abortion, from a Jain perspective (Sarma 2013). The orthodox position he describes is fairly simple: abortion forces a *jīva* to be reborn when the goal is to break out of the cycle of rebirths. At its base, the Bhaṭṭāraka’s view reflects the vow of nonviolence: do not kill a *jīva*, whether in the form of an embryo/fetus or any other embodied state. Yet his response quickly unfolds in multiple directions.

First, akin to the three activities of body, speech, and mind described in chapter 3, he explains that thinking about killing brings negative karma, but acting toward abortion and actually doing it invites the worst karmic cost, even if the aim is to save the mother (Sarma 2013). This point suggests that one who seeks an abortion and one who provides it, even with a positive purpose in mind, will still incur karma, indicative of the three methods by which one can harm directly, cause another to harm, or approve of another's harm.

Second, the Bhaṭṭāraka does not condemn abortion specifically, nor does he describe any social or institutional consequences for those involved. Like all actions in a karmic-based system, if a woman seeks an abortion for any reason, she will take the “penalty of karma,” which suggests that abortion is a serious karmic harm against a five-sensed being, but it is one among many kinds of karmic harm (Sarma 2013). Notably, there is no reference to the origin of life, fetal personhood, or the phase of pregnancy, as characterizes many contemporary secular and religious bioethical views.

Third, he maintains an important distinction between the Jain mendicant ideal—which makes no provision for killing anything—and the lay practice of that ideal, saying, “The question [of abortion] is a social question, not a religion question” (Sarma 2013). This distinction reveals a persistent feature in Jain ethics—described in chapters 3 and 4—that one can uphold a “religious” ideal of absolute nonviolence as a functional aim, even while recognizing the “social” contexts and limits in which lay Jains, and even some monks and nuns, will lack the capacity to pursue the ideal in every moment or to the fullest degree.

Fourth, the Bhaṭṭāraka directs attention to activities that transpire *prior* to the ethical question of abortion, by practicing restraints of body, speech, and mind. *Brahmacarya*, or sexual restraint, he asserts, is “the best gift” of self-control that reduces one's karmic impact by freeing an individual from the potential of pregnancy, the need for abortion, and other related procreative dilemmas (Sarma 2013).

It should be noted that there are cultural examples of Jains taking a very strong position against abortion. For instance, some lay Jains in India have organized rare protests against the liberalization of the nation's abortion laws (“Jains Hold Rally,” 2008), and there is at least one online proclamation by a Jain mendicant against abortion, intercaste marriage, and premarital sex (“No Abortion” 2018). At the same time, in a 2018 *Young Minds* article titled “Ahimsa in a Pro-Choice World,” Jain youth Ayush Bhansali presses the Jain engagement with abortion beyond *ahimsā* and karma. Bhansali contends that “the debate around abortion often exists as a proxy for broad opposition to patriarchy, misogyny, sexual assault, and other types of systemic violence which affect women daily . . . [and] which under the complex of Ahimsa, Jains should be very much against” (2018). Bhansali argues that being a “responsible Jain” means examining nonviolence as it applies to personal choices as well as to wider social structures and conditions (2018).

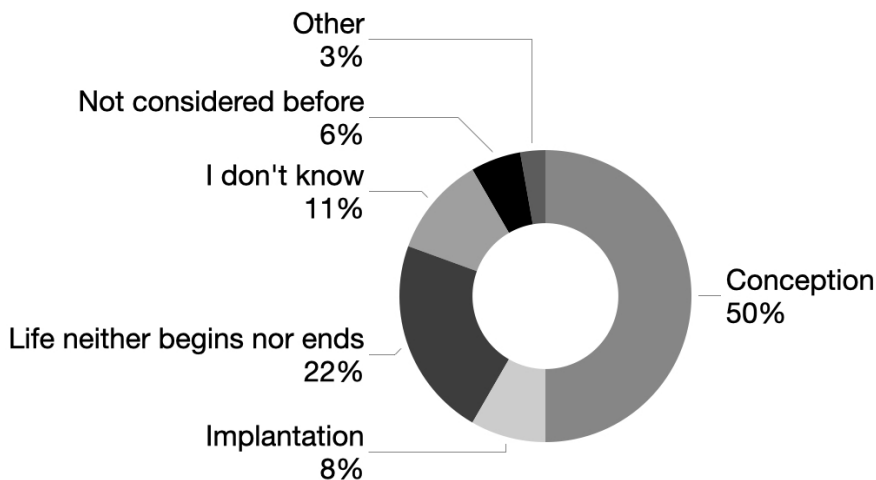


FIGURE 6. Responses of Jain medical professionals to the question of when life begins ($n = 36$).

Our survey of Jain medical professionals reveals diverse considerations in relation to the theory and practice of abortion, as well as the starting point of life. In keeping with the Jain concept of rebirth, a significant minority of respondents felt that life does not begin or end (22%, $n = 36$). Others privileged positions of philosophical bioethics, placing the beginning of life at conception (50%) or implantation (8%) (figure 6). No participants selected *quickening* (fetal movement) or *viability*, when the fetus can survive outside the womb with support. There was also a degree of ambivalence (17%), suggesting that notions of beginning may not be critical to ethical action in Jainism.

The majority of Jain medical professionals (64%, $n = 36$) considered abortion a form of violence. Yet over a third of respondents either disagreed, were unsure, or selected “Other,” offering the following remarks:

“[It] depends on strong medical reason [such as the] mother’s health and her life.”

“[D]epends upon why abortion has to be done.”

“It is [a form of violence], but it needs to be taken on a case by case basis.”

“[I]f you are saving the life of the mother it should be okay. I would rather discourage the need for abortion.”

When asked about providing abortion services, only a small minority had done so (6%, $n = 36$) while most had not provided such services (78%), with the following additional comments:

“No, but [I] have referred patients.”

“I dispensed emergency contraceptives which I wish I never had to be part of; I worked for somebody and had no choice.”

“Only when it was medically indicated.”

“I do not even refer the patient to another doctor who might perform abortion.”

Participants provided greater insight into their various perspectives when asked to review a series of statements related to abortion and choose all that apply. Those statements selected by the highest percentage of respondents were as follows: (1) abortion can be justified only when needed to save the life of the mother (58%, $n = 36$); (2) abortion can be justified when the child may have genetic or physical anomalies that could lead to a life of suffering or early death for the child (56%); and (3) the Jain tradition has influenced my attitude regarding abortion (44%) (figure 7). A significant minority felt that “abortion can be justified when a woman feels that she cannot emotionally or financially take the burden of another child” (28%). Only a few respondents believed that viability is a significant marker (8%), whereas no respondents felt that abortion can be justified when the child is an undesired gender (0%).

At opposite ends, a very small minority affirmed a more permissive position that “abortion can be justified at any stage prior to birth” (5%, $n = 36$), while a slightly larger minority felt that “abortion can never be justified” (11%). No respondents felt that “abortion can be justified by the mother for any reason whatsoever” (0%).

At the same time, a number of respondents felt that “providing abortion services and counseling is an important healthcare service for women and families” (28%, $n = 36$), and that “greater education regarding abortion and abortion laws among medical/healthcare professionals is needed to reduce stigma and increase safety and accessibility to abortive services” (22%). A similar percentage felt that there are too many obstacles for women seeking abortion (20%), while a very small minority believed “there should be additional regulations on women seeking abortion” (3%).

These responses make clear that abortion, although considered a form of violence by the majority of respondents, may be an accepted course of action in the face of other costs. As shown above, over half of Jain medical professionals calculate the costs to a mother’s health, as well as a child’s future suffering due to impairments, against the karmic cost of terminating fetal development *in utero*.

It is precisely this principled plurality of views that makes Jainism difficult to map onto bioethical continuums, or to compare with Western normative ethics. For example, one might see in the Jain vow of *ahimsā* certain overlaps with deontological duties that offer a more or less universal injunction against killing innocent persons. At the same time, in the Jain concern for the well-being of the mother, the suffering of the child, as well as social and economic hardships, one may see overlap with a utilitarian view in which the most ethical choice is determined not by following a set duty, but by maximizing pleasure and minimizing pain for the greatest number of those involved. Jain views that emphasize the importance of karmic responsibility within a specific context may look more like a virtue ethics

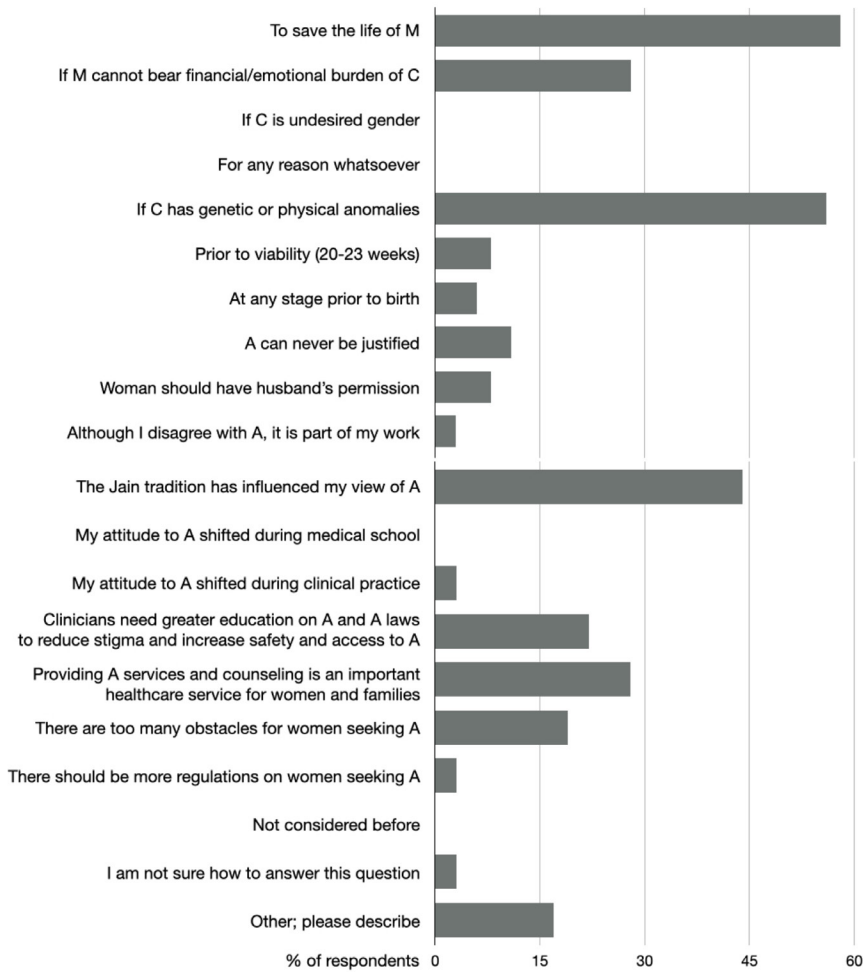


FIGURE 7. Responses of Jain medical professionals to the question “Which of the following statements [regarding abortion] is/are most true for you? Choose all that apply” ($n = 36$). Key: M = mother, C = child, A = abortion.

approach that explores what kind of person *to be* rather than what action to do. Jain principles and views that stress care and compassion might seem more akin to a feminist “ethics of care,” which illuminates coexisting obligations, diverse relationship roles, and the historical subordination of certain members of society.

Jain medical professionals in our survey certainly do not reflect a strong public stance against abortion. Though the majority agreed it is a form of violence, only a small minority believed that additional abortion regulations are needed (3%, $n = 36$) or felt that abortion cannot be justified for any reason (11%). Even the

Bhaṭṭāraka Cārūkīrti, whose view on abortion we described above, makes it clear that taking nascent life must be examined at various levels. He states: “The Jain answer is not about killing, dying, birth, [or] abortion. It is about understanding the karmic consequences of one’s actions. If you want to [harm] someone and you ask someone else to do it, you are still responsible for the [harm]” (Sarma 2013). He inquires further: If our desire for sex leads us to consider killing a nascent life, or having someone else kill for us, might a different desire lead us to kill a person or an animal? These questions, along with the plurality of views from individual Jains, reveal that a Jain ethics of abortion exceeds any single issue of life’s beginning, fetal personhood, or stage of pregnancy, and complicates a flat application of the vow of nonviolence. Jains who grapple with the issue of abortion offer responses that seem to reflect Jain principles within the constraints of specific contexts—for example, in India or abroad, in the medical field or not, as a mendicant or lay Jain, as a male or female, or as a young person striving to hold together Jain values with an emergent social and political consciousness.

Population Control

The 2018 global population of 7.6 billion people is expected to near 10 billion by 2050, according to the United Nations. Bioethical debates regarding population control typically include concerns over maintaining reproductive freedom contrasted with managing the ecological effects of a fast-growing global population. Sixty-one percent of Jain medical professionals felt that humans have an obligation to address overpopulation through restrained reproduction (61%, $n = 36$).

In the Jain tradition, the presence of human beings in the world does not pose a challenge in and of itself. As noted in chapter 2, the attainment of human form is understood to be rare and valuable.⁴¹ Further, within Jain cosmology, the total number of living beings is said to remain constant, though populations of individual groups may fluctuate over time (BhS 5.8§244a). The Jain time cycle of progress and regress, described in chapter 2, may also challenge any innate resistance to the damaging impacts of overpopulation, though lay Jains frequently understand this cosmology metaphorically, rather than literally (Donaldson 2020). Paul Dundas writes:

Jain tradition is clear that, as we enter the final stages of each particular movement of the wheel of time, it is necessary and inevitable that both humankind and the natural worlds socially and ecologically decay. The world will be destroyed and human beings will degenerate intellectually and culturally, to be renewed subsequently with the next motion of time. (2002b, 97)⁴²

Nevertheless, many global Jains—both mendicant and lay—have increasingly vocalized a strong commitment to environmental flourishing over the past three decades, which is often linked to the detrimental effects of overpopulation and its associated economic, health, and political impacts.⁴³ L.M. Singhvi’s “The

Jain Declaration on Nature”—presented to Prince Philip at Buckingham Palace in 1990—marked a distinct entry of Jainism into the global conversation on religion and the environment. In that document, Singhvi stresses the role of self-restraint and the avoidance of waste in Jainism, stating that Jain laity “must not procreate indiscriminately lest they overburden the universe or its resources” (2002, 223–24).

In terms of their own population, Jains constitute a very small community. As noted in chapter 1, Jains make up approximately 0.42 percent of the Indian population, while around 285,000 Jains live abroad. The 2011 Census of India analysis shows that the Indian Jain community has increased by only 5.37 percent between 2001 and 2011; this phase of slowed growth, beginning in 1981, is less than other minority communities in the country (Bajaj 2016, 1–2). This stalled growth is attributed to several factors, including high urban habitation and high levels of female literacy (see chapter 1). Jains also have fewer children. Per hundred of the population, Jains have 8.9 children compared to 13.2 for Hindus (5). Some Jains have been prompted to question the survival of the tradition, both in India and abroad, due to issues such as intercultural marriage,⁴⁴ the disenfranchisement of young Jains, exposure to other religions, female feticide (on which more below), dowry obligations, and geographic assimilation (Jain and Malaiya 2011).

Contemporary Jainism hinges between a perceived need among some members of the community to bolster their own numbers while others see value in restraining wider trends in overpopulation. Yet it is unclear whether a Jain approach to population control would be socially prescriptive or an expression of personal restraint. As one survey respondent commented regarding population control, “My responsibility begins and ends with me. What someone [else] has to do or not is his or her responsibility.”

Contraception and Sexuality

The use of contraceptives has a double effect of preventing conception and protecting oneself from sexually transmitted infections. Modern debates often include questions of whether one should interfere with the natural process of fertility and whether contraception is a form of early abortion. Broader questions emerge from these concerns as to how contraception may redefine (a) the role of sex, (b) the family as a formative social structure, and (c) characteristics of responsible parenthood.

Classical Indian medical treatises say little about contraception beyond strategies of interrupting natural processes and establishing times of abstinence. Bhagwan Dash and R.N. Basu (1968) offer a fascinating account of antifertility measures in ancient and medieval India. Mira Roy (1966) explores methods of sterilization and sex-determination in the Vedas, while A.C. Kar Galib et al. describe the development of female contraceptive methods ingested orally or applied to the vagina that appear peripherally in medieval āyurvedic manuals (2008, 82–83).

The orthodox view of contraception in Jainism is the vow of *brahmacarya*, mentioned above and detailed in chapter 3. As already stated, *brahmacarya* is expressed as celibacy for mendicants and self-imposed sexual restraints for lay Jains. Bhaṭṭāraka Cārūkīrti, in the above-mentioned interview, agrees that limiting the population is important but asserts that family planning methods, such as condoms, also kill sperm, which are living *jīvas* (Sarma 2013). From this view—between burdening planetary life through over-procreation on one hand and killing millions of sperm on the other—one can see why the Bhaṭṭāraka's preferred resolution is *brahmacarya*. However, the belief that semen contains life is not uniform in the Jain tradition. Pūjyapāda, for example, asserts that semen is nonliving, which presents a different karmic calculation to that of the Bhaṭṭāraka (SSi 2.32§324; 2000a, 136; see also note 17 in this chapter, and chapter 2 on the violence of sex acts). In any case, the Bhaṭṭāraka insists that the question of contraception is a response to social conventions and should not be confused with the more comprehensive aim of Jain celibacy. As in his discussion of abortion, he states, not that all Jains must practice *brahmacarya* in a uniform way, or at all, but that one should not dilute the Jain ideal to accommodate social norms.

Ācārya Tulsī presents an alternate mendicant view in his book *The Vision of a New Society* (1998), emphasizing the important role of self-restraint for lay Jains. He discusses the ways in which entertainment commodifies sexuality (28), describing popular media as selling the obscenity of “uninhibited sex” (24). He accepts the evolution of the tradition in light of changing social norms but simultaneously implores young people to explore a “new vision” of self-imposed limits for themselves (24–30).

Among lay Jains who interpret the vow of *brahmacarya* within the context of intimate relationships or marriage, attitudes on contraception are unclear. M. Whitney Kelting's research on Jain wifehood among Jains in Maharashtra offers anecdotal evidence that persistent social pressure to have children means that birth control is out of the question until a child, and ideally a son, is born (2009, 70). Conversely, in an editorial in *Young Minds*, a public online forum run by Young Jains of America (YJA), Shardule Shah asserts that *brahmacarya* has unique value in the US context, even though it is difficult to interpret (2009). Celibacy is not merely a prohibition, asserts Shah, but an invitation to “develop who you are as a person without the pressure of marriage, family, [and a] full-time job” (2009). Shah speaks candidly about complications that accompany sex, including STDs and emotional distraction, even with the use of condoms or birth control. This perspective seems to offer a hybrid view wherein strategic celibacy in certain life stages permits a layperson to retain the freedom of self-development prior to the expectations of adulthood. Given the high rate of education and literacy among Jains—which likely reflects historical periods of economic security among the community as a whole—a question emerges as to what role the value of *brahmacarya* might play, even for the period of adolescence and young adulthood,

in facilitating educational opportunities and personal growth outside marriage among young Jains, especially women.⁴⁵

The majority of Jain medical professionals we surveyed did not see a conflict between Jain principles and contraception (64%; $n = 36$). A small minority believed that birth control violates Jain principles (6%), while others did not know (14%) or had never considered the issue before (11%). In the survey, we did not differentiate between preventative contraception, such as condoms, pills, devices, or implants, and emergency contraception administered in the short-term window after sex, which could raise different ethical considerations. Consequently, we can only cautiously infer that the attitude of Jain medical professionals toward contraception suggests that most of them may not see semen as comprising living beings, and/or that they may accept the loss of such living beings for the sake of other benefits related to nonprocreation.

FACILITATING NASCENT LIFE: IVF, CLONING, AND STEM CELL RESEARCH

We now turn to practices and procedures that facilitate the production of life in special circumstances, including IVF, cloning, and stem cell research.

IVF

In vitro fertilization (IVF) is an assisted reproductive technology (ART) introduced in the 1970s⁴⁶ to treat infertility in women with damaged fallopian tubes. Women who seek IVF may also be past the ideal reproductive age, have infertile male partners, or lack the ability to produce eggs, in which case a sperm or egg donor is needed. In most IVF procedures, a woman undertakes a regimen of hormone injections to overproduce eggs that are then removed and fertilized with sperm *in vitro*, or “in glass.” The fertilized eggs develop to the blastocyst stage (at five to seven days), whereupon the nascent embryos are evaluated for quality, before one or more are transferred into the mother’s uterus in hopes of implantation.

IVF is a basic process involved in many other reproductive technologies, multiplying its ethical significance, which we discuss throughout this section. Because IVF aims to enable procreation without sexual intercourse, bioethical debates often include the personal and social impacts of separating genetic, gestational, and traditional parent-child relations while also enabling single and same-gender parents. The production of excess embryos in IVF raises ethical questions about their storage, their use in research or for other purposes, and their destruction, as well as about the ethics of preimplantation genetic screening, and concerns over donors and donated embryos, eggs, or sperm.

The 2004 President’s Commission on Bioethics also warned against unintentional harms to children born using ART, such as increased rate of prenatal death, premature birth, developmental abnormalities, multi-fetal pregnancies, and the

disposal of unused embryos (“Assisted Reproduction” 2004). According to the US Centers for Disease Control, only 25 percent of all ART cycles completed in 2016 resulted in live births, meaning that numerous fertilized embryos were terminated in the IVF process (“ART Success Rate” 2016). In addition to failed pregnancies, excess embryos produced during IVF pose persistent questions of whether to destroy them, freeze them, or use them for embryonic stem cell research, which we will discuss shortly.

Multi-fetal pregnancies are also more common with IVF. Countries such as Canada, the United Kingdom, Australia, and New Zealand permit only two embryos to be transferred during IVF, in an effort to limit multiple births. However, the United States has no transfer limit; consequently, the incidence of triplet and high-number births increased by a factor of 6.7 from 1971 to 1998, including high-profile pregnancies with six to eight surviving infants (Kulkarni et al. 2013). While the US rate of multiple pregnancies decreased by 29 percent from 1998 to 2011—coinciding with a 70 percent reduction in the transfer of three or more embryos due to medical association recommendations—multi-fetal pregnancies remain more common for IVF patients, as does the practice of “selective fetal reduction” surgeries to remove excess or diseased fetuses (Kulkarni et al. 2013).

In the orthodox Jain view, the decision to produce life, regardless of the means, equates to taking on greater karmic attachments, as described previously. In his brief summary of Jain bioethics, Jain physician Dilip Bobra states that Jainism is indifferent to the method of procreation, but more concerned with the fact that “children are the cause of attachments and aversions leading to [the] influx of karmas” (2008). He goes on:

[A] follower should be satisfied if they can have children by natural means. If not, then they have to accept it as a result of their past karmas [whereby a] childless experience provides them a chance to accumulate less karmas to improve future births. As we see, [the] life of a monk or a [nun] is one of renunciation of family and children for spiritual progress. (2008)

Childlessness, as Bobra suggests, is frequently attributed to karma within Jain texts and described as a malady that cannot be cured by medicine or ritual. Phyllis Granoff explains that Jain and Buddhist texts rejected the ritual treatment of infertility, in part, as a response to Hindu stories that depicted sages and gods granting a child to a devotee (1998a, 252, fn. 60). Yet we do find instances in Jain literature when laypeople—especially kings and queens whose social duty involves producing an heir—benefit from reproductive assistance. In addition to the transfer of Mahāvīra’s embryo, described above, the third chapter of the *Antakṛd-daśāḥ* describes the reproductive failures and miracles experienced by Queen Devakī and Lady Sulasā, including the transfer of six embryos by Harinegamesī and an extraordinary conception earned through the austerity of fasting (AD 3.8; Bauer 1998, 67; Kelting n.d. [a]).⁴⁷ However, it should be pointed out that these royal birth

stories, including those of the Jinas, tend to result in a child forgoing the bonds of marriage and parenthood in order to pursue the path to liberation.

As indicated above, Jain medical manuals also suggest practices to assist one in conceiving. These include selecting the optimal time for sex (daily during cold weather or approximately weekly during warm weather; neither morning nor evening, nor during particular auspicious days), eating foods that will enhance virility (milk and related products, sugarcane and jaggery substances, and cold beverages), and womb ceremonies to ensure conception (Patil et al. 2015, 143–44).

Bobra further illuminates collateral costs within IVF that invite reflection on the social harms of the practice, beyond Jain-only concerns, including the exploitation of low-income egg donors or surrogate mothers who risk their bodies for financial stability, as well as sperm donors who may produce children they never know (2008).

Yet many Jain women still feel that childbearing is crucial to their identity. Kelt-ing found that, among Jain women in Maharashtra, many feared infertility; children offer their mother emotional support, social status, and economic security in their later years (2009, 69–70). Within the context of Indian marriage, when wives may struggle to integrate into their husband's family home, a woman's first child—especially a son—"mark[s] their full participation in their husband's lineage" (70). Conversely, Manisha Sethi's research on Jain nuns revealed that many female renouncers valued their freedom from maternal roles (*vairāgya*) as "superior to and more fulfilling than anything that [lay] women were capable of achieving in marriage and family" (2012, 38–39).⁴⁸

This tension of freedom-versus-family between Jain nuns and laywomen is unexpectedly illuminated by feminist ethicist Susan Sherwin when she challenges the supposition that IVF expands women's reproductive independence. Sherwin draws attention to social arrangements and cultural values that drive women to take on the burden and risks of IVF, including women's lack of access to meaningful jobs; a dearth of close friendships with men and women, which might necessitate intimacy with "one's own" child; and persistent views that childbearing is a woman's greatest purpose (2010, 548–49). Akin to the lay Jain view stated earlier—that the sexual restraint of *brahmacarya* may enable greater personal development—Sherwin emphasizes the ability of women to redefine their roles in society without dependence on expensive technologies and the norms of marriage, while opening other possibilities for personal growth and social satisfaction (551).

The majority of Jain medical professionals in our survey supported IVF and other ART. When asked, "Do you feel that individuals or couples who cannot conceive naturally can ethically use reproductive technologies such as in vitro fertilization (IVF), egg/sperm donation, or surrogate mothers? Choose all that apply," a majority of respondents replied "Yes" to IVF (69%, $n = 36$), egg donation (58%), sperm donation (58%), and surrogate mothers (53%). A minority believed that "none of the above" treatments is acceptable (17%), while others felt that adoption is a preferable option (22%) or had not considered it before (3%) (figure 8).

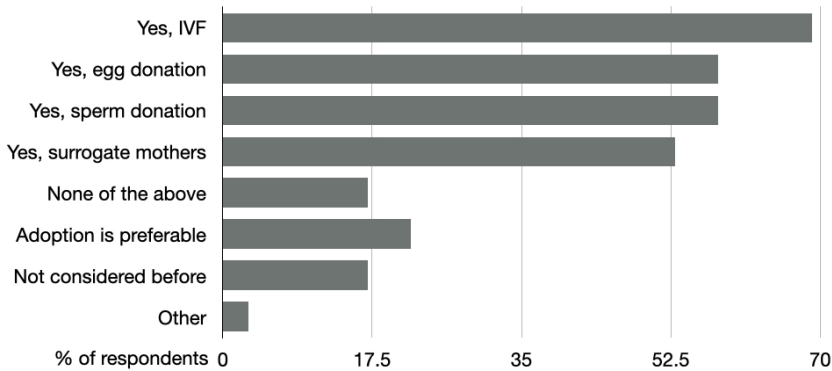


FIGURE 8. Responses of Jain medical professionals to the question “Do you feel that individuals or couples who cannot conceive naturally can ethically use reproductive technologies such as in vitro fertilization (IVF), egg/sperm donation, or surrogate mothers? Choose all that apply” ($n = 36$). Key: M = mother, C = child, A = abortion.

A relatively small number of respondents affirmed that the Jain tradition informed their view of ART, which suggests that this contemporary bioethical issue remains underexplored through a Jain lens (17%, $n = 36$).

Cloning

After the 1996 cloning of a sheep named Dolly in Scotland, public fears erupted over the science-fiction potential of cloning human beings. Reproductive cloning of an entire organism requires transferring a DNA-containing nucleus from one cell into a second denucleated egg cell. This new cellular combination is then blasted with electricity so that it multiplies to become a blastocyst that is implanted into a surrogate’s womb. The first cloning actually took place a century prior to Dolly when German biologist Hans Adolf Eduard Driesch successfully separated two-celled sea urchin embryos. Each cell grew into a complete sea urchin, demonstrating that embryonic cells contain full genetic instructions. Various cloning procedures advanced through the twentieth century with frogs, rabbits, and cows, among others. Dolly was the first animal to be successfully cloned from adult, rather than embryonic, cells.

Fears of cloning a human being have not been realized, and cloning animals is still a laborious and limited task. Researchers now say that Dolly’s greatest contribution to science was the advancement of therapeutic cloning of DNA and cells, rather than organisms. For example, cloning is essential in embryonic stem cell research and in utilizing adult cells to generate “pluripotent” stem cells that can potentially produce any cell or tissue the body needs to repair itself (Weintraub 2016). Bioethical debates must differentiate between reproductive cloning of a whole organism and therapeutic cloning of DNA, cells, and embryos. Major topics of debate include creating embryos to be destroyed in research, health risks to mothers (whether human or nonhuman animals), the high rate of embryo and

fetal loss, altering natural reproductive processes, and the commodification of new life.

Contemporary Jains appear to be somewhat ambivalent on the topic of cloning. The uncertainty seems to derive from what aspect of a living being is impacted through cloning, and/or how nuclear transfer impacts karma. In their attempt to explain genetic inheritance in light of karma, several Jain authors exemplify a trend that one scholar calls the “scientization” of Jainism, seeking to demonstrate their tradition’s compatibility with contemporary science, including biology (Auckland 2016, 199).⁴⁹

Bobra, for one, argues that transferring genetic material (as in nuclear transfer) does not transfer karma—that is, cloning can reproduce the physical form but cannot reproduce the karmic or luminous body that carries a *jīva*’s karmic history between rebirths (2008; see also chapter 2).⁵⁰ “A duplicate body does not make a duplicate person,” he writes, maintaining that only the entrance of a *jīva* after fertilization can create a fully living being.

Conversely, Narayan Kachhara, a Jain mechanical engineer who has written extensively on Jainism and science, asserts that information from the karmic body may be transferred into a new life as part of DNA (2014, 39). Likewise, Sohan Raj Tater, in his book *The Jaina Doctrine of Karma and the Science of Genetics*, affirms that “karmas are [the] cause and genes are their effects,” suggesting that transferring genetic material results in a karmic transfer as well (2009, 303). It is notable that Tater’s book is prefaced with blessings from three Jain monks, each lauding the comparative study of karma and genetics (2009, viii–ix).

Survey responses among Jain medical professionals were split as to whether cloning represents a violation of Jain principles. A greater number of participants agreed that cloning living humans (44%, $n = 36$) and animals (46%, $n = 35$) constitutes a violation than agreed that cloning human and animal embryos (37%, $n = 35$) or cells (23%) does. Some respondents either did not know whether cloning is a violation of Jain principles (14–20%) or had not considered the issue before (9–14%), which suggests that cloning is an underexplored issue in Jain medical ethics. When participants were asked what Jain principles were violated in cloning, no uniquely Jain concepts were listed. However, we have cautiously inferred three different concerns, dividing the answers accordingly:

“If a soul can enter into a cloned being, it is a different being.”

“A cloned embryo has a soul in it.”

(1) The above answers suggest that the *theoretical* ability to reproduce a genetic copy is not inherently violent because a “copied” being remains a unique living being with a *jīva* of its own.

“A ‘live’ adult cell is not a cell with a soul.”

“... cell [cloning is different] than cloning a person or animal life.”

(2) These responses suggest that the genetic duplication of cells is either not a form of violence at all, or exacts less violence than reproducing a genetic copy of a living animal or human.

“The embryo itself will have life and it is experimented on without that embryo having a choice.”

“The intention to make the copy is unethical.”

“[Cloning is] against the process of nature [and] can easily be used and abused.”

(3) These comments suggest that the *practical* application of cloning constitutes a form of violence. This violence can occur at the level of intention, at the level of direct physical action that infringes upon the freedom of another being, or at the level of indirect violence caused by technology that overreaches the bounds of human activity, creating opportunities for injurious application.

Stem Cell Research

Stem cells are the foundation for every organ and tissue in our bodies. The most common include embryonic stem cells that exist only during fetal development, and adult (or tissue) stem cells that emerge during fetal development and persist throughout our lifetime. Adult stem cells, such as skin cells, are tissue specific. Embryonic stem cells are considered “pluripotent” because they can potentially produce any cell or tissue the body needs to repair itself. These cells were first isolated in mice in 1981 and in primates in 1995; human embryonic stem cells were isolated in 1998 at the University of Wisconsin.

This advancement was controversial, however, because research teams derived their stem cells from the tissue of aborted fetuses and from embryos left over from IVF treatments. US stem cell research, then, has been closely related both to the legalization of abortion (in the 1973 *Roe v. Wade* decision) and to the development of IVF technology. Since 1998, more than a thousand different “lines” of self-renewing embryonic stem cells have been created and shared by researchers worldwide. These cells can be used to repair damaged tissue, replace cells associated with chronic diseases, and generate cells for bone and tissue transplants (Löser et al. 2010).

The debate over embryonic stem cell use centers on disagreements regarding the moral value of a human embryo. Many countries have enacted legislation prohibiting the creation of embryos for research while allowing use of already-existing embryos discarded from fertility treatments. In 2001, President George W. Bush affirmed earlier US legislative efforts to protect embryos by prohibiting federal funding of research utilizing embryonic stem cells derived after August of that year. Although this law did not affect private or state-funded programs, it did inhibit overall US research. In 2008, President Barack Obama expanded

federal funding for embryonic cells so long as they were derived from IVF with consent from the donor families. Today, the countries with the most active embryonic stem cell programs include Japan, Singapore, China, South Korea, Australia, South Africa, the United Kingdom, Switzerland, Brazil, Mexico, and the United States (Dhar and Ho 2009).

Beyond the connection to abortion and IVF, embryonic stem cell advances are indebted to genetic cloning research. In the 1960s, John Gurdon's work on nucleus transfer showed that already-specialized tadpole cells inserted into the nucleus of an egg cell could still produce a complete living frog (Maayan and Cohmer 2012). These cells had been "reprogrammed" from specialized cells to pluripotent cells. Building on Gurdon's work and the successful cloning of Dolly the sheep in 1996, Japanese scientist Shinya Yamanaka published papers in 2006 and 2007 identifying four genetic factors in transforming specialized cells into an embryonic stem cell-like state, called "induced pluripotent stem cells," first in mice, then in humans (Philbrick 2011). Induced pluripotent stem cells are one of the most significant contributions derived from cloning research because the process creates embryonic cells without destroying embryos, thus sidestepping many of the earlier moral concerns.

A Jain approach to stem cell research appears to be conflicted. On one hand, embryos are considered living five-sensed human beings; injuring them interrupts their path of existence and brings negative karma to oneself. On the other hand, many lay Jains accept that certain forms of social progress may require some harm. In his sociological analysis of the Jain community, Vilas Sangave explains this tension succinctly: "Though [violence] is unavoidable in the sustenance of life, Jainism . . . tries to limit it for essential purposes only" (1997, 168). It bears restating here that "essential" activities for a mendicant are quite different from those for a lay Jain. Padmanabh Jaini highlights that any efforts "to improve the quality of life of one segment of society must be weighed against its negative impact on other humans, as well as on animals, plants, earth, water, and air" (2002, 151). In his brief examination of engineered biology in the Jain tradition, Chapple draws particular attention to the suffering of animals who are produced, often through cloning-related procedures, to carry disease and endure painful tests and death for research purposes, which most Jains would see as high-level karmic violations of five-sensed beings (2013, 86; see chapter 6).

Respondents in our survey felt that induced pluripotent embryonic stem cells pose a slightly lesser violation of Jain principles than cells sourced from embryos. Although the status of stem cells is unclear in Jainism (as discussed above), most respondents did not see a violation (figure 9).

Those who elaborated on the Jain principles violated in stem cell research described altering the formation of life "for a few selfish reasons," that "cloning a higher order organism is violence," and that cells should be used from dead embryos only. Another candidly states, "I'm not sure if [the] Jain tradition has

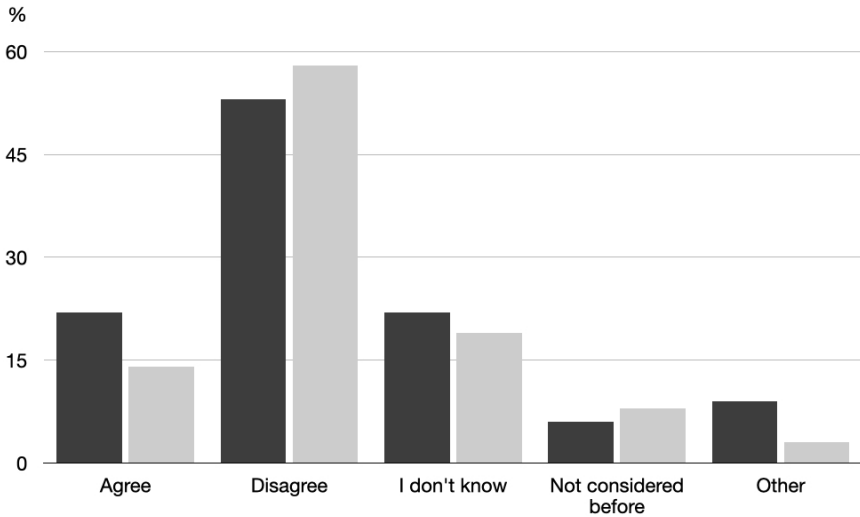


FIGURE 9. Responses of Jain medical professionals ($n = 36$) to the statements “Pluripotent stem cells can develop into a variety of adult cells such as tissue or organs. I consider research on pluripotent stem cells derived from embryos a violation of Jain principles” (black bars); and “Some adult cells can be ‘reprogrammed’ to be pluripotent stem cells. A normal skin cell, for example, can be ‘reprogrammed’ into a pluripotent cell. I consider research on ‘reprogrammed’ pluripotent stem cells to be a violation of Jain principles” (gray bars).

a position on this issue.” In an online forum, Jain physician Mitul Mehta, who describes himself as “an imperfect follower” of the tradition, acknowledges that Jain mendicants would likely not support embryonic stem cell research but that the Jain doctrine of *anekānta-vāda* compels him to consider “millions of people’s lives that can be saved/improved by deriving a single immortal cell line” (2015). Even though Mehta himself does not personally conduct research on stem cells—and implies he would not be comfortable doing so—he offers support for those who do. In this distinction, Mehta implicitly acknowledges his indirect approval of, though not an active participation in, stem cell research that would have significant health benefits for higher-sensed beings. He also stresses the utilization of *one* stem cell line—rather than proliferating multiple lines—to seek the proposed benefit.

ALTERING NASCENT LIFE: JAIN VIEWS ON SEX SELECTION AND GENOME EDITING

In the realm of facilitating nascent life, what alterations, if any, are ethically viable from a Jain perspective? In this section, we examine practices and preferences that influence fetal characteristics, including sex selection and genome editing.

Sex Selection

The medical use of ultrasound technology, which was first applied to the abdominal cavity in the 1950s, enables medical personnel to confirm the progress of pregnancies, assess fetal growth, and detect congenital disorders and multiple fetuses. After the thirteenth week of pregnancy, ultrasound operators can identify fetal genitalia with relative accuracy.

The ability to determine fetal sex raises critical bioethical questions regarding cultural gender bias, while also drawing attention to preimplantation genetic diagnoses that allow parents to abort embryos and fetuses with undesired traits. When combined with certain historical preferences for sons, sex-selection has contributed to the rise of female feticide and the phenomenon of “missing women” globally (Sen 2005, 225). A 2016 report from the UN Human Rights Council documents widespread disparities in the birth ratio of males and females by nation, with Liechtenstein, China, Armenia, and India topping the list (“Female Infanticide Worldwide” 2016, 3). The report tracks the largely failed efforts of countries to reverse sex ratio imbalances through legislative efforts that outlaw sex detection and/or incentivize female birth. It also tracks the rise of “reproductive tourism” in countries where sex detection is legal, such as Thailand. There, parents can utilize IVF technologies along with related preimplantation genetic diagnosis, preimplantation genetic screening, and sperm sorting for the additional purpose of sex selection.

In India, preference for male children has a long history. A well-known Vedic wedding blessing exhorts the new bride to “be the mother of a hundred sons” (Iyer 2002, 41). The classical Hindu law book *Manu-smṛti* offers mixed views of a woman’s role in society (*stri-dharma*), but concludes that she can never live independently of the control of her father, husband, or son (MS 5.147–50).

Various cultural practices also value gender differently. The continued practice of dowry (*yautaka*), or the price families pay for their daughters to marry, though outlawed in India in 1961, makes females a financial liability.⁵¹ Sons, on the other hand, may improve their mother’s social and home-life status and increase parents’ financial security in their later years. One study suggests that women’s stated son preference is primarily due to financial concerns (Robitaille 2013).⁵²

The Indian census has shown a significant gap between male and female children (0–6 years old) for the past hundred years, in spite of contemporary legislative efforts to outlaw sex-selective abortion or feticide (“Sex Ratio of India and Madhya Pradesh 1901–2011” 2011). Although the Indian government enacted the Pre-Conception and Pre-Natal Diagnostic Techniques Act of 1994, which regulates the sale and use of ultrasound machines, it later had to pass additional amendments to enforce this law as birth ratios continued to decline (Tabaie 2017).

The 2011 Census of India shows 940 females per 1,000 males nationwide; these differentials vary throughout the country, with the north having a greater absence of females and parts of south India having a largely equal gender ratio

(Diamond-Smith et al. 2008, 697; Klaus and Tipandjan 2015). The International Center for Research on Women (ICRW) concluded in their 2006 report on India that preference for sons was widespread but not universal. Among several findings, the ICRW concluded that wealth did not reduce son preference, but education level and access to media did result in a meaningful reduction in male child bias (Pande and Malhotra 2006, 5–6). In recent headlines, the 2017–18 Economic Survey published by the government of India reports twenty-one million “unwanted” females 0–25 years old, referring not only to sex-selective abortions, but also to girls who, according to the National Family Health Survey, “disappear” because of disease, neglect, or inadequate nutrition (Ministry of Finance 2018, 112).

Indian diaspora communities are not immune to this gender gap. Abrevaya (2008) shows that, even in the United States, Chinese and Indian girls are more likely than others to be sex-selectively aborted; the author estimates 2,000 missing girls in the United States between 1991 and 2004.

Gender Disparity in Jainism. Jain communities also show an imbalance in their gender ratios, with an average of 954 females per 1,000 males compared to 939 per 1,000 among Hindus, as reported in the 2011 Census of India (Bajaj 2016, 4). In states with large Jain populations, Jains have better ratios of females than neighboring Hindu communities—Gujarat (966 Jain/916 Hindu), Maharashtra (964/928), and Delhi (942/865)—with the exception of Chhattisgarh (947/990) and Karnataka (952/972). Jains have a significant disparity in Haryana, with only 895 females per 1,000 males. The reality of sex preference among Jains confronts us with a tradition that has, since its earliest texts, affirmed a fourfold community of monks, nuns, laymen, and laywomen, in which nuns have continuously outnumbered monks (Sethi 2012, 4; KS 5.132–45). Historically, women could marry, enter ascetic life, or remain single, pursuing education through any of these avenues (Sangave 2001, 147–50).

Yet gender disparity also exists in the textual sources and in modern practice. N. Shāntā's comprehensive treatise on Jain nuns, titled *The Unknown Pilgrims* (1997), and Padmanabh Jaini's landmark text *Gender and Salvation* (1991a) both detail historical debates over the ability of female nuns to achieve liberation. The Digambara position rejects the possibility of women's liberation, given bodily limitations such as menstruation, physical frailty that prevents austerities, psychological instability, and the prohibition of female nudity in society that is required for ultimate detachment from material goods (Balbir 1994b; Jaini 1991a; Shāntā 1997, 640–53). While Śvetāmbara mendicants disputed these assertions at length within historical debates, being born female was still considered inauspicious, and they concurred with their Digambara counterparts that once one has achieved the right worldview (see chapter 3), one will never again be born female (Jaini 2010c, 178–79). The Śvetāmbaras also assert that the nineteenth Jina, Malli, was female—which the Digambaras deny—but her being born female is understood to

be an extraordinary event (*āścarya*), and Malli's rebirth as a woman is attributed to deceit, as the tradition holds for all women and "third sex" individuals (Jaini 2010c, 179–80; Zwilling and Sweet 1996).

Jain medical literature aligns with other Indian medical treatises on the various causes of a child's sex, such as the relative ratio of maternal and paternal fluids, the embryo's karma, and the position in the womb, as noted above. Rahul Peter Das describes cultural rituals to reverse the sex of a child in the womb (*vivar-tana*), especially the *pumsavana* rite to ensure the birth of a son (2003, 4, fn. 7).⁵³ Although Jain texts do not mention this specific ritual, the *Kalyāṇa-kāraka* advises the mother to lie on her right side for a male baby and on her left side for a female, as already mentioned (KK 2.43).

Contemporary Jain practices regarding gender remain complex. Several Jain studies scholars, perplexed by the prevalence of Jain nuns within a tradition that privileges male asceticism, have conducted studies of nuns who persist in finding creative outlets for personal growth, higher education, and community leadership (Fohr 2006; Sethi 2012; Shāntā 1997; Valley 2002a). Laywomen are seen as indispensable transmitters of the tradition—perpetuating recitations, songs, mantras (Kelting 2001), Jain education of children, and family fasts (Kelting 2009). Nevertheless, Digambara women are prevented from performing *pūjā* on the temple statues of Jinas, and menstruating women of all sects are often discouraged from entering the temple.⁵⁴

Simultaneously, there are efforts to resist gender bias from within the Jain community. Three examples follow. In the first, Pravin Shah, the long-standing chair of the JAINA Educational Committee, released a 2017 summary of temple education in the United States. He named several unique features of the diaspora context, such as gender parity, that require alterations in Jain teachings. He stated that "Jain children have grown up in American culture where . . . [b]oth men and women are treated equally. Jain religious principles are not and should not be male dominated . . . [although] [s]everal of our [current] rituals are male dominated rituals" (2017).

The second example comes from Ācārya Candanā, a contemporary Jain Sthānakavāsī nun and *ācārya* who cofounded the nonprofit organization Veerayatan in 1973 to make the Jain tradition accessible for global Jains by emphasizing service, education, and personal development. Veerayatan now has programs in the United Kingdom, Kenya, Dubai, Nepal, and the United States. In an imaginative book titled *Walk with Me* (2009), Ācārya Candanā recreates canonical dialogues between Mahāvīra and his chief disciple Indrabhūti Gautama, with her own voice substituting for Gautama's. In the chapter concerning women's liberation, Gautama is disturbed that Mahāvīra has ordained a female mendicant by the name of Candanā.⁵⁵ After reflecting on the resiliency with which Candanā has met the obstacles of her life, Gautama concludes:

[T]here was a time when I too was a strong believer in the superiority of men, but the bold step taken by Mahāvīra to ordain women like [Candanā] made me believe that our mothers, sisters, and daughters are no less! In the future, whenever men,

in their ignorance and arrogance, try to oppress women, I am sure that [Candanā] will inspire women of the world to assert and trust themselves. (Chandanaji and Parikh 2009, 48)

The final example comes from Ācārya Mahāprajña (1920–2010), the tenth mendicant leader of the Śvetāmbara Terāpanthīs, who strongly condemns the practice of dowry in his book *The Happy and Harmonious Family* (2008). Ācārya Mahāprajña connects violence toward women and girls to an unchecked desire for wealth and status through dowry. “The notion that all these [material desires] will be fulfilled by dowry . . . has raised the value of commodities and has devalued women” (Mahāprajña 2008, 232). He suggests a “revolution” by exhorting Jains to consider new vows that reestablish marriage as a dowry-free institution (235).

In our survey of Jain medical professionals, the overwhelming majority believed that prenatal testing for the purpose of sex selection violates Jain principles (83%, $n = 36$). Among the participants who chose “Other,” one explained, “I do not agree with sex-selective abortion, but [that disagreement] has nothing to do with my Jain principles.” Two others described the Jain principles they felt were violated, stating: (1) “Of course it is against the Jain principles to kill a life no matter what the reason” and (2) “Any abortion is a violation of Jain principles.” Recall from our survey analysis on abortion that no respondents felt that abortion can be justified when a child is an undesired gender (0%).

Although this response makes a strong statement against sex-selective abortion, modern gender selection often transpires through indirect means such as preimplantation diagnoses and IVF “selection,” as well as gamete/zygote intrafallopian transfer. As Vibhuti Patel argues in his study of sex determination methods in India, these reproductive technologies enable some couples, including Jains, to ensure a male child, seemingly without direct abortion; rather, embryos are “selectively transferred” (2014, 243). Similarly, Sulekh Jain, an influential Jain layman in the United States, recently discussed the practice of sex selection among Jains in his book *An Ahimsa Crisis: You Decide* (2016). Intended as an invitation for the global Jain lay community to reassess cultural attitudes that have tempered the full impact of the Jain doctrine of nonviolence, the book draws special attention to Jain physicians who provide sex-selective services, lamenting that the community has remained largely silent on these practices (188–89).

Although there is evidence of gender bias against females in Jainism—within the textual tradition, in mendicant practice, and in the population disparities of certain Indian states—there is also strong resistance to sex screening among the Jain medical professionals we surveyed, and significant social statements directed against the discrimination of women and in favor of gender equality.

Genome Editing

Genome editing emerged, in part, from developments in IVF and cloning technologies, and it shares many of the same bioethical concerns. In IVF, when an embryo reaches the blastocyst stages around day five, researchers can make a

preimplantation genetic diagnosis of up to two thousand gene disorders—including cystic fibrosis and sickle cell anemia, among others—to ensure the implantation of a disease-free embryo, and preimplantation genetic screening to ensure that the embryo contains the standard forty-six chromosomes. After genetic anomalies have been identified, gene editing technology permits scientists to delete, modify, or replace a damaged portion of an organism's genome. The term *genome* refers to a complete set of an organism's genetic sequence. In humans, a copy of the entire genome is contained in the nucleus of each cell.

Early gene editing in the 1970s through 1990s involved isolating individual genes to evaluate how a change in that particular section of DNA (genotype) resulted in a change within the organism (phenotype). For example, scientists replaced the normal genotype of a white-fur mouse with a mutated gene that resulted in a creature being born with the phenotype of black fur. This process helped determine gene function in mammals, and also established a reliable way to model human diseases in mice. The ability to target genes to change the color of a mouse's fur, however, makes it clear that genome editing can be used for *therapeutic* purposes, that is, to target genes associated with illness and disease; and for *nontherapeutic* purposes, targeting genes associated with fur color or other desirable physical traits. During this early period of research, two additional gene editing tools emerged using enzymes called nucleases to cut the bonds between the nucleotides that make up strands of DNA and RNA. These tools, called zinc finger proteins (ZnFs) and transcription activator-like effector nucleases (TALENs), expanded gene editing beyond mice embryonic stem cells to rats, fruit flies, zebrafish, butterflies, and livestock, among others.

Recently a new gene editing technique has harnessed bacteria and enzymes to achieve the goals of ZnFs and TALENs faster, cheaper, and more accurately. CRISPR (clustered regularly interspaced short palindromic repeats)—also called Cas (CRISPR-associated) proteins—uses the immune system of bacteria to remember DNA segments from viruses. These bacteria then create an RNA “guide” that activates the next time the virus appears, directing an enzyme to cut the DNA at a precise location, which deactivates the virus. Throughout 2017, CRISPR/Cas technology was used in animal models to remove HIV and target the “master” genes in cancer that cause tumor growth; it was also used to limit fertility in disease-carrying mosquitos and to engineer fast-growing algae for biofuel production (Dean 2017).

Chinese teams have already begun using CRISPR/Cas techniques to alter disease-causing genes in human embryos, and work is under way in the United Kingdom and Sweden to study early embryonic development and miscarriage (Ledford 2017). In December 2018, Chinese scientist He Jiankui shocked the global research community by announcing he had successfully created the world's first “CRISPR babies,” twin girls born through IVF. Jiankui claimed to have altered the genomes related to HIV transmission using CRISPR methods, and was subsequently fined

and sentenced to three years in prison by the Chinese government; two of his collaborators were likewise fined and given lesser sentences (Normile 2019).

Many in the scientific community urge caution with CRISPR application, especially to germline, or reproductive, cells such as egg or sperm that will be incorporated into the DNA of every cell in the offspring's body in perpetuity (Kang et al. 2016). Even the scientist who pioneered CRISPR gene editing, Jennifer Doudna, has called for a pause in editing heritable genes until scientists, doctors, and the public have a better understanding of the ramifications of altering an entire line of descendants, and she has urged the development of standardized guidelines for what is ethically acceptable in genome research (2015). One of the persistent concerns with CRISPR technology is that the same methods currently in use for disease intervention can also be used for nontherapeutic embryonic enhancements related to an offspring's physical stature, memory, athleticism, sex, or hair/eye color, potentially creating, according to ethicist Michael J. Sandel, a socially sanctioned form of "liberal eugenics" (2012, 101).

While Jain texts propose various factors as causes of illnesses, as explained in chapter 4 and mentioned with regard to the health of the embryo above, the underlying cause of one's present bodily condition is karma. Karma affects the longevity of living beings as well as their specific birth forms with various disabilities and dysfunctions (see chapter 2). As discussed in chapters 4 and 6, the earliest Jain canonical texts implored mendicants to accept their afflictions without seeking treatment in order to exhaust their karmic debt, with an understanding that physical maladies are part of the suffering of *saṃsāra* that must be worked through to release karma. At the same time, the practice of curing illness gradually developed within the Jain mendicant community and became prevalent by the medieval period, as detailed in chapter 4. As noted there, Granoff explored Jain healing practices and identified a shift from seeing disease as a "natural" karmic effect that one had to live out, to mendicants seeking physicians' services and even themselves providing medical care for fellow monks and nuns (1998b, 286–87). Although these examples of medicinal therapies are not aimed at the genetic level, they offer a precedent for resisting disease with compassion, knowledge, and skill.

Consequently, we are left with an ambiguous relation between the roles of karma and biological genetics in understanding human health. If, as Tater asserts above in relation to cloning, "karmas are [the] cause and genes are their effect" (2009, 303), what happens when genes are deleted, modified, or replaced through editing techniques? Gene editing also challenges the Jain concept of *pariyāpta/aparyāpta* (described in relation to fetal development above and in chapter 2). Are geneticists interrupting the karma of an *aparyāpta* being by removing a dysfunctional gene to permit its successful development?

Some contemporary Jains attempt to address the ambiguous relation between genes and karma in creative ways. In a recent analysis, Kachhara and colleagues correlate genetic inheritance with nondestructive karma responsible for

embodiment, rather than destructive karma that affects the *jīva* (Kachhara et al. 2017, 133–34). Specifically, the authors state that genes—and, thus, gene editing—impact name-determining karma (*nāma-karman*) and status-determining karma (*gotra-karman*) (133–34).⁵⁶ It is not clear whether this version of gene editing—as only affecting embodiment—would be acceptable to other Jains.

Further, there are many strong statements regarding preventative health among contemporary Jains. Ācārya Tulsī, for instance, describes three aspects of protecting health, namely: (1) following lifestyle choices to aid in disease prevention; (2) trying to regain health with the help of natural means if an illness does come, due to negligence or certain conditions; and (3) taking the help of an experienced physician if the need arises (1998, 134). These three suggestions are geared toward healthcare after birth, rather than altering the genome before implantation. Although this view affirms various paths to health, Ācārya Tulsī privileges self-administered efforts in wellness, both preventative and therapeutic, seeking the help of a physician only if needed. Ācārya Mahāprajña also emphasizes the continual responsibility one has to maintain their own health, beyond inherited genes. In his book *Lord Mahavira's Scripture of Health* (2001), Ācārya Mahāprajña describes the various *pariyāptis*—calling them “bio-potentials”—as *ongoing* foundations for life and health (2001, 42–52). “[P]ariyaptis are our vitalities,” he writes. “Health is very closely related to them . . . [O]nly when the power of resistance against diseases is linked not only with just one system but with all the [pariyāptis], would it be possible to maintain health” (Mahāprajña 2001, 45). Since these “bio-potentials” require attentive upkeep beyond the womb, could one infer that gene editing may be permitted so long as it is accompanied by responsible care of one’s body after birth? Or is preventative care the preferred mode to deal with inherited health ailments?

Without providing clear guidance as to a Jain lay view of genome editing, Bobra maintains that beneficial medicine, including gene editing, must be balanced with personal restraint. He says that “Jainism believes in preserving health of [the] physical and mental body in order to pursue spiritual progress while keeping the principle of nonviolence in the forefront” (2008). In other words, karmic advancement requires a healthy body, but achieving that health through harming of others ultimately undermines spiritual progress. Bobra seems to tentatively accept gene editing *if* its effects enable one to more effectively pursue the Jain path, and *if* the harm to other beings is negligible. He also sees gene editing as possibly a technology that could reduce current levels of medical research conducted upon humans and animals. Still, he warns against the possible abuse of gene editing technology for financial gain, and rejects genomic editing for the purpose of enhancement, which “could become an exclusive right of the rich” (2008).

Only a small percentage of the Jain medical professionals in our survey felt that gene editing for therapeutic purposes constitutes a violation of Jain principles when done to an animal’s genome (11%, $n = 36$) or a human genome (8%, $n = 36$), meaning that most did not see a violation (figure 10). In fact, a greater number

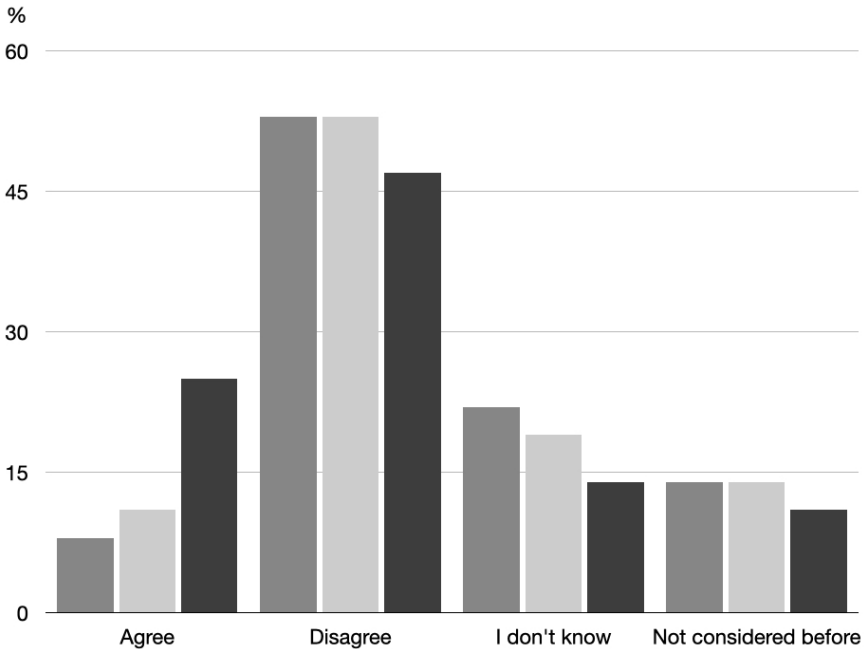


FIGURE 10. Responses of Jain medical professionals ($n = 36$) to the statements “I consider gene therapy (the ability to identify and change the *human* genome for therapeutic purposes, rather than desired traits) a violation of Jain principles” (dark gray bars); “I consider gene therapy (the ability to identify and change the *animal* genome for therapeutic purposes, rather than desired traits) a violation of Jain principles” (light gray bars); and “I consider genetically modified foods a violation of Jain principles” (black bars).

of participants felt that genetically modifying food violated Jain principles (24%, $n = 37$).

These survey responses suggest that Jain medical professionals might accept the benefits of gene editing technologies that target genes responsible for disease. When viewed in concert with the above views, however, we see a more complex network of issues, including the value of self-administered care rather than external intervention, a recognition that health (and, thus, gene editing) is primarily to enable one's karmic advancement, and the possible benefits of gene editing for humans and animals as well as its potential to be abused.

While Bobra points out that gene editing could relieve unnecessary medical testing on vulnerable populations, current genomic research requires the ubiquitous use of animal models, which necessitates the institutionalization of animal breeding, injury, and death, which many Jains reject (see chapter 6). Additionally, gene editing is already being used to alter animal and plant genes for industrial food production as well as transgenic applications for organ or cell transplants. It is likely that Jain attitudes to gene editing may change depending on the application. Regardless of one's genes, contemporary Jains place a great deal of emphasis

on how one responds to one's embodied state of existence. This includes considerations that go beyond merely scientific approaches, and cultivating equanimity in the face of afflictions of all kinds remains an exemplary practice in Jainism. As Kachhara points out, "scientific attempts cannot assure that the moral, intellectual and social qualities [of individuals] will improve" (2005).

JAIN PRINCIPLES OF APPLICATION FOR REPRODUCTIVE ETHICS

While a uniform "Jain view" on reproductive ethics is impossible, what insights emerge through this analysis regarding taking/preventing, facilitating, and altering nascent life?

First, a Jain view begins by questioning the motivations for producing life itself. In the Jain tradition, individual birth is always a *rebirth* based on a being's past karma. Birth exposes one to the suffering and delusion of *samsāra*, even as human birth provides an invaluable opportunity to develop right worldview, knowledge, and conduct. The decision and process of physical procreation is a source of karmic bondage through activities, passions, and attachments to offspring, sexual pleasures, and women, for which self-restraint, or mendicant *brahmacarya*, is considered the most effective response. Sexual activity is not karmically neutral in the Jain view, insofar as living beings may be injured through intercourse and many possible progeny may fail to implant. Even lay Jains recognize that sex, marriage, and family can inhibit an individual's development, which suggests that the restraint of *brahmacarya* may offer a strategic, if temporary, abstention from sexual relations that supports personal and spiritual growth. In the face of infertility, for example, some Jains may pursue ART options, such as IVE, while others see infertility as a valuable limit that provides opportunities to adopt existing children, or to remain childless and increase one's karmic advancement.

At the same time, the period of gestation can produce a powerful bond between mother and fetus capable of nurturing an inclination toward spiritual advancement, and can satisfy social norms of lay life, norms that most lay Jains do not seriously challenge. Although all individuals are reborn due to their own varieties of karma—ideally into a mother's womb, family, and environment that are conducive to karmic progress—the ultimate goal in Jainism is to not be reborn at all.

Second, injuring nascent life is considered a serious act of violence comprising various components of body, speech, and mind and resulting in inauspicious forms of karmic bondage. Modern Jains, including surveyed medical professionals, frequently describe killing nascent life—whether through abortion, IVE, cloning, or stem cell research—as requiring a mental component of planning, a verbal component of requesting or directing, and a physical component of doing or causing another to provide relevant procedures, thus magnifying the karmic repercussions. The valuation of the destruction of a nascent human life as representing a

high-level karmic violation is based not on modern bioethical markers of life's beginning, personhood, or stage of pregnancy, but on the belief that an individual *jīva*'s karmic path is significantly advanced to warrant rebirth as a five-sensed human being.

Third, in light of these consequences, the primary vow of nonviolence is a guiding principle in Jain reproductive ethics. However, nonviolence does not function as a flat prohibition of all violence. In the case of abortion, for instance, Jain medical professionals measure the violence of abortion alongside related harms, such as death of the mother or future suffering of a child. To a lesser extent, some lay Jains also consider the relational context of a mother's emotional or financial well-being as a possible justification for abortion. In the case of stem cells, cloning, and gene editing, lay Jains seem to accept the destruction, manipulation, or duplication of cells if that harm can benefit five-sensed humans and animals, though destruction of fully developed living beings for the same purpose is less tenable.

Fourth, collateral costs are factored into the violence of an action. The Jain views cited above frequently identify unintended costs within reproductive issues. For instance, abortion may involve the direct and indirect approval or participation of medical professionals, family, or community members. Procreating exacts a cost upon other planetary lives in society and the environment, and these costs should be considered prior to reproduction. IVF raises concerns of justice for low-income egg/sperm donors and gender equality, creates excess embryos, and can lead to pregnancy complications such as multi-fetal implantation and selective reduction.

Some lay Jains, commenting on stem cell research, cloning, or gene editing, suggest limiting research to essential therapeutic benefits only and also limiting the numbers of beings involved in such research (e.g., utilizing only one stem cell line rather than many). The proactive pursuit of self-administered preventative care, as well as the high value placed on enduring afflictions, may also restrain the need for one to utilize treatments derived from stem cell research or gene editing technologies.

Fifth, women are largely considered valuable and educated members of society, though their treatment differs across texts, time, geography, and role in either a mendicant or lay community. Traditional mendicant manuals present women as sources of attachment to avoid, even as they are the vital progenitors of Jinās and other illumined Jain figures. In the modern period, Jain women have the highest degrees of literacy in India, regularly pursue education through the lay or mendicant path, and have low reproductive rates. Although women exist within wider social-cultural expectations, there are efforts with the Jain community as a whole to challenge certain contemporary aspects of gender inequity.

In considering these multifaceted Jain views, mendicant perspectives often emphasize a paramount ideal of restraint, even if it cannot be practiced fully, while other Jains—including intermediate mendicants, medical professionals, and lay Jains living outside of India—strive to interpret Jain principles in new contexts for

which there is often neither textual guidance nor historical precedent, requiring flexible practice. The lack of a unified outlook or prescriptive paradigm, however, does not mean that the Jain tradition has no contributions to make toward these issues. On the contrary, the preliminary Jain principles of application outlined here offer a productive starting point for engaging the complex issues of reproductive ethics through the values of an equally complex tradition.