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Attitudes towards the new genetic and assisted reproductive technologies in Sri Lanka: a preliminary report

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ABSTRACT *Discussions about the ethical and social impacts of the new reproductive and genetic technologies have tended to be dominated by concerns that have originated in European and North American societies. In this paper, we explore perspectives on these issues from a distinctively Asian perspective. Using a questionnaire-based descriptive study, we examined the attitudes of 36 Sri Lankan Medical Officers following a course preparing them for the Master of Surgery (Obstetrics and Gynaecology) Part I examination in Colombo. The survey highlights an extremely positive response to many aspects of the new technologies in contrast to the long-standing ambivalence towards prenatal diagnosis and the prospect of therapeutic termination. We end by discussing some of the ways in which ideas about re-birth and fate may influence the reception of the new technologies among some doctors.*

Introduction

Recent advances in obstetrics, embryology, molecular genetics and related clinical fields have brought about rapid and far-reaching changes in reproductive medicine. The proliferation of techniques for prenatal diagnosis as well as for the collection, screening, storage and implantation of eggs, sperms and embryo significantly extend the possibilities for how conception and gestation might take place, who may be involved at the different stages and what information may be made available to inform reproductive decisions. Techniques such as *in vitro* fertilization (IVF), artificial insemination by donor (AID), egg donation, embryo donation, prenatal diagnosis (PND) and pre-implantation genetic diagnosis (PGD) bring with them complex ethical, social and legal questions for professionals and lay people alike. How do novel forms of human genesis impact upon family relations and identity? Where does inanimate matter end and sacred life begin? How is acceptable therapy to be distinguished from mere enhancement? Should there be regulation in this field and, if so, by whom and how? If there is regulation, how might it be reconciled with individual human rights such as

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the right to found a family? Social scientists have contributed significantly to the attempts to answer these questions through their attempts to locate what might otherwise be seen as narrow issues of technological development in medicine, within broader social and cultural frameworks. Not surprisingly, attention has focused mainly on Western societies, that is, in the societies where these technologies originated and have proliferated as part of the bigger project of medicalizing and regulating human reproduction. However, it would be a mistake to assume that the impacts of the new technologies are only felt in the First World. The diffusion of new medical knowledge, expertise and technology does not stop at the borders of Europe, Australia, Japan or North America, but increasingly finds its way into the medical systems of less developed countries. There is an emerging literature on this topic (see, for example, Macer, 1994).¹ The context we are keen to explore in this paper is that of the new technologies in Sri Lanka.

Sri Lanka is a 'Democratic Socialist Republic' of some 19 million people. The island has considerable ethnic and religious diversity. The main ethnic groups are Sinhalese (74%), Tamils (19%) and Moors (7%), with smaller groups such as Malays and Burghers accounting for less than 1%. In terms of religious affiliation, the main groupings are Buddhist (69.3%), Hindu (15.5%), Moslem (7.6%) and Roman Catholic (6.9%). The largest communities within Sri Lankan society at present are Sinhala Buddhists (approx. 69% of the population) and Tamil Hindus (approx. 15%).

In relation to other countries in the South Asian region, Sri Lanka has a favourable per capita GDP (US\$829 in 1999), a very high rate of literacy (estimated to be over 90%) and a free national health service with reasonable access. Since economic liberalization in the 1980s, a mixed economy of health-care delivery has developed, with a thriving private sector in operation. In both sectors, the transfer of new medical knowledge and technical expertise is both rapid and pervasive. The new reproductive and genetic technologies are no exception in this regard, with involvement going back to the early 1980s. At the present time, there is a considerable amount of interest in the new technologies, with the first clinics offering IVF on Sri Lankan soil opening in 1999. There is also a growing interest in just how developments in genetics and genomics will impact on society. At present, guidelines and laws governing the operation and regulation of these services are non-existent. However, the National Science and Technology Commission of Sri Lanka has recently appointed a study group to draw up a policy on biomedical ethics for Sri Lanka.²

Attitudes towards the new reproductive and genetic technologies

The data we present are one part of a more extensive study of the reception and assimilation of the new reproductive and genetic technologies in Sri Lankan society.³ As part of this research, we have undertaken a series of questionnaire

surveys of doctors and medical students regarding their attitudes towards various aspects of the new reproductive and genetic technologies.

The questionnaire survey was intended to do two things. The first part of the questionnaire repeats elements of a survey carried out in 1986 to ascertain attitudes towards genetic counselling, prenatal diagnosis and therapeutic abortion among doctors ($n = 302$) and students ($n = 143$) (Jayasekara, 1986, 1989; Jayasekara, Kristl & Wertelecki, 1988). The second part of the questionnaire elicits views on recent developments in assisted reproduction such as IVF, AID and PGD as well as cloning and cryopreservation. We report here on the current survey only, but it is hoped that in time we will be able to develop a more comprehensive longitudinal dimension to the analysis and thereby identify shifts in attitude over the period in which the Human Genetics Unit of the Colombo Medical Faculty has been in operation.

Here we provide a preliminary report on questionnaire responses from a group of 36 doctors who were attending a course preparing them for the Master of Surgery (Obstetrics and Gynaecology) Part 1 examination in Colombo. These doctors were asked to fill out a questionnaire at the end of their training course. The average age of the group was 31 years. They were mostly male (78%) and married (58%). In terms of religious affiliation, 22 were Buddhist (61%), 5 Hindu (14%), 3 Moslem (8%), 4 Christian (11%) and 2 did not declare (6%). The majority of these doctors [29 (81%)] had had some training in genetics whilst at medical school and were aware [31 (86%)] of the existence of the human genetics unit providing genetic counselling in Colombo.

In the following sections, we present the results regarding attitudes in three areas: genetic counselling, prenatal diagnosis and therapeutic abortion, and the new reproductive technologies.

Genetic counselling

The Human Genetics Unit of the Colombo Medical Faculty was started in 1983 with funding from the World Health Organization. It is the only unit of its kind in Sri Lanka and currently supplies training courses in clinical genetics to a wide range of postgraduate and undergraduate doctors as well as running clinics and genetic awareness campaigns for the wider community. The survey carried out in 1986 revealed a high level of support for the provision of genetic services (see Table 1) (Jayasekera, 1989, p. 269). Similarly high levels of support were recorded in the present survey. Genetic counselling was felt to be an important element in making responsible reproductive decisions by 97% (35) of the respondents, and the same proportion thought that it should feature as part of prenatal and family planning services. Three (8%) doctors felt that genetic counselling should not be a regular part of medical training. Of these three, one doctor indicated concern that coverage would be inadequate in an already crowded curriculum, and one was of the view that this was not an area that the government should prioritize given the current economic circumstances of the country.

TABLE 1. Attitudes towards genetic counselling

	Yes	No	No reply
Genetic counselling results in more responsible reproductive decisions?	97% (35)	—	3% (1)
	[99/93]*		
Genetic counselling should be offered as part of prenatal and family planning services?	97% (35)	3% (1)	
	[96/82]		—
Genetic counselling is both a useful and necessary medical service?	94% (34)	3% (1)	3% (1)
	[98/85]		
Genetic counselling should be offered as a regular part of medical training?	92% (33)	8% (3)	—

* Figures in italics are the percentages reported for doctors and students respectively in 1986.

Prenatal diagnosis and the therapeutic abortion debate

Questions regarding the availability of genetic counselling services are closely tied to those concerning the availability of prenatal diagnosis and in turn to the possibility of acting upon such a diagnosis to terminate the pregnancy. At the present time, abortion is strictly illegal in Sri Lanka; it is only available where a mother's health is directly threatened and three physicians are prepared to sign a form to this effect.⁴ Even though the law on abortion was changed in 1995, reforms stopped far short of what was wanted by many campaigners for a more liberal approach to abortion. Attempts to modify the Penal Code so that abortion was available in cases of rape, to unmarried mothers, cases of incest or where there are fetal abnormalities were unsuccessful. Therapeutic abortion remains a highly controversial topic, with representatives of the main religious groups implacably opposed to legislation that would make it permissible, even under these circumstances.

The responses given in Table 2 suggest a high level of support for the provision of prenatal diagnostic services. The notable exception here is where the exercise is intended to identify the sex of the fetus. Only 14% were of the view that this was a legitimate use of the technique; this represents a substantial reduction on those who were in favour at the time of the 1986 survey. The number of doctors who felt that it might be appropriate for an abortion to take place if a gross defect were identified through amniocentesis was 86%. A similar proportion suggested that it was acceptable to discard embryos that had been identified as abnormal as a result of PGD. However, a slightly lower proportion (78%) felt that PGD was an acceptable method of screening in the first place.

Rather surprisingly, the proportion of doctors who felt that there should be legal provision for therapeutic abortion appears to have gone down since the

TABLE 2. Attitudes towards prenatal diagnosis and therapeutic abortion

	Yes	No	No reply
Amniocentesis significantly affects the potential usefulness of genetic counselling?	64% (23)	25% (9)	11% (4)
	[94/75]		
Amniocentesis is a good idea if a genetic disorder like Down's Syndrome has already appeared in the family?	92% (33)	6% (2)	3% (1)
	[98/89]		
Amniocentesis should be offered to all pregnant women over the age of 35 years if there is legal provision for therapeutic abortion?	72% (26)	28% (10)	—
	[78/72]		
Amniocentesis should be offered to satisfy prenatal curiosity about the sex of the fetus?	14% (5)	86% (31)	—
	[30/32]		
If by amniocentesis a gross genetic defect was detected an abortion might be appropriate?	86% (31)	9% (3)	3%(1)
	[89/69]		
Using pre-implantation genetic diagnosis (PGD) is an acceptable way to screen for genetic disorders?	78% (28)	17% (6)	5%(2)
If yes, to previous question: If abnormalities are identified through PGD it is acceptable to discard the embryos?	93% (26)	7% (2)	—
There should be provision made in the Law to carry out a therapeutic abortion when a genetic defect is detected ante-natally?	81% (29)		
	[96/88]	17% (6)	3%(1)

earlier survey, with 80% in favour as opposed to 96% and 88% of doctors and students respectively in 1986. When compared with the 1986 respondents on attitudes to abortion this group, if anything, seem to be slightly more conservative. This may be accounted for by the fact that in the 1986 survey it was clear that older practitioners appeared to be more liberal in their attitudes, whereas the present sample is made up of doctors at an earlier stage in their careers (average age = 31 years). It is possible that, owing to their lack of experience, these doctors were more orthodox in their approaches and attitudes. Those who objected to a change in the law in the present survey were made up of four Buddhists, one Christian and one man who did not declare his religious persuasion. At a more general level, concerns about replacement of the population may be causing a change in attitudes towards abortion. Population growth

TABLE 3. Attitudes towards the new reproductive technologies

	Yes	No	No reply
New technologies which involve the manipulation of sperm, eggs and embryos outside the body are acceptable methods to overcome infertility?	100% (36)	—	—
Artificial insemination by husband is an ethically acceptable way to achieve conception?	100% (36)	—	—
Artificial insemination using donor sperm is an ethically acceptable way to achieve conception?	64% (23)	33% (12)	3% (1)
Egg donation is an ethically acceptable way for a woman to achieve a pregnancy?	69% (25)	25% (9)	6% (2)
Embryo donation is an ethically acceptable way for a woman to achieve a pregnancy?	69% (25)	28% (10)	3% (1)
The use of surrogate mothers is an ethically acceptable practice for couples who are infertile?	56% (20)	33% (12)	11% (4)

is now virtually static in Sri Lanka, and there are general concerns that the civil war in the north has taken a significant toll, particularly amongst young men.⁵

The majority of those who responded negatively to questions regarding prenatal genetic diagnosis and therapeutic abortion did so on the grounds of concerns about risk and safety (55%). Only 3% objected on religious grounds and a further 22% on the grounds of personal morality.

Assisted reproduction and the new genetic technologies

Whilst some ambivalence was in evidence in relation to questions over therapeutic abortion, there appeared to be an extremely positive response where assisted reproduction was concerned (Table 3). The fact that the new technologies, at least on the face of it, are pro-natal and life affirming seems to find considerable favour with doctors from all religious backgrounds. All respondents felt that using the new technologies to overcome infertility was acceptable. Likewise no one found any ethical problems with artificial insemination by husband (AIH). The introduction of third-party semen by way of artificial insemination by donor raised ethical concerns for 36% of respondents. The donation of eggs and embryos both received a favourable level of support, with 70% suggesting these transfers were ethically acceptable. Respondents were much less happy about the use of surrogate mothers as an ethically acceptable root to parenthood, with only 55% answering positively.

New developments in the area of reproduction and genetics are currently arousing considerable interest in Sri Lanka at the moment. Even though in practical terms these techniques are a long way off, there is a growing awareness

TABLE 4. Attitudes towards future developments

	Yes	No	No reply
Cloning of human beings may be an ethically acceptable means of overcoming reproductive problems in the future?	50% (18)	47% (17)	3% (1)
Cloning of body cells may in future be an ethically acceptable way of generating organs and tissues for transplants?	92% (33)	8% (3)	—
It is an acceptable practice to freeze and store gametes for parents who may wish to use them later for artificial insemination?	92% (33)	3% (1)	6% (2)
It is an acceptable practice to freeze and store gametes for parents who may wish to use them later for posthumous reproduction (that is, after the father has died)?	72% (26)	25% (9)	3% (1)
It will be a great achievement when genetic engineering of the human genome enables us to eliminate serious genetic defects?	97% (35)	3% (1)	—

and anticipation of their scope and consequences. In general, respondents appeared to be very positively inclined towards the new technologies (Table 4). With one exception, respondents were optimistic about the genome project and its implications for the elimination of genetic disorders. A large majority (93%) felt that therapeutic cloning for the production of organs was acceptable. Respondents appeared to be comfortable with cryopreservation as a means of overcoming reproductive failure (91%), with 71% suggesting that posthumous reproduction was ethically acceptable. The number of respondents comfortable with human cloning was significantly less but, even so, 50% felt this was an acceptable procedure. Christians seemed particularly troubled by this procedure, whereas Buddhists and Hindus were less so.

Discussion

For the sample of doctors we surveyed, it is clear that there is a high level of recognition of the growing significance of developments in genetics to the well-being of their patients. However, this is not a recent trend but one that has developed over the last two decades and largely through the work of the Human Genetics Unit in identifying genetic disorders and counselling doctors and patients on their implications. Awareness of genetics and its growing potentialities in reducing suffering and maximizing human well-being is thus well established. For example, the prospect of being able to modify the human genome through ‘genetic engineering’ is seen as a positive step by virtually all respondents. Indeed, when it comes to some of the more advanced genetic

techniques, such as PGD and cloning, which, incidentally, are causing serious controversy in the West, there are also high levels of positive agreement. We would suggest that such responses are not mere fetish for the 'new' but warrant a more careful investigation in terms of local frameworks of value and belief. The example of cloning is a case in point.

The definition of what constitutes life is central to the ethical debate surrounding the new reproductive technologies in general and stem cell research in particular. At present the debate has been conducted principally in the West and in ways that are underpinned by Judeo-Christian notions of 'life'—where it begins and where it ends. Looked at from the perspectives of Asian religions the new technologies pose distinctive challenges when it comes to their ethical interpretation and application. For example, applying a Buddhist understanding of how life comes into being and the relationship of that life to earlier incarnations avoids some of the ethical 'hot-spots' generated by a Judeo-Christian view of life but creates others (see Keown, 1995; Harvey 2000). As in other Asian religions, Buddhism takes the view that life is not simply generated out of the physical union of a sperm and an egg but also requires a third element, namely the arrival of an energy or force (*viññana*) arising from the karmic cycle (*samsara*) and propelled by the deeds and desires of those who have lived in former births. For Theravada Buddhists, this process requires the combination of physical (*rupa*) and meta-physical (*nama*) elements.⁶ Life begins when the meta-physical element, referred to as *viññana*, unites with the physical elements (*rupa*) present inside a mother's womb. According to this view, sperm and ovum are two cells or physical elements which exist in their active form for 1–2 days; fertilization results in the formation of a zygote which becomes a morula and later a blastocyst. Within Buddhism, each of these processes involves physical elements only and will take about 8–10 days to complete. Without the union of the meta-physical (*viññana*), implantation and further development of the embryo cannot take place. Only with the union of the *viññana* with the physical elements present in a woman's body can life be said to have begun. Furthermore, the question of whether an implanted embryo goes on to produce a healthy baby, is aborted before full term or develops in ways that are defective is due the quantum of good or bad *kama* which is brought in to this life from a previous one. Following this line of analysis, many Buddhists would argue that sperms, ova and embryos in petri-dishes on a laboratory bench or kept in a freezer are not living entities. The principal reason for this is that, within Buddhism, the natural order of things is for the *viññana* to unite with physical matter located in a mother's womb and not into a petri-dish on a bench top or into a freezer. Consideration of cloning from the Buddhist point of view would suggest that, even if cloning results in the creation of a physical body, that body would only become animated at the point at which the *viññana* descends. As it is this event which is ultimately definitive of life for Buddhists rather than the physical conditions which precede it, many of the objections raised against cloning in the West are, in theory at least, of little consequence for Buddhists.

Conclusion

In this paper, we have presented some data from the initial stages of a survey intended to throw light on the way in which the new technologies are being received in Sri Lanka. In general, doctors from all religious backgrounds appear supportive of a wide range of new techniques designed to overcome reproductive failure of one kind or another. They also seem broadly supportive of taking steps to terminate pregnancies or dispose of embryos in circumstances where genetic abnormalities are identified. However, whereas pronatalism receives widespread support beyond the medical profession, actions that are seen as destroying life, even in circumstances where there are serious abnormalities, set doctors on a collision course with religious leaders and the influential constituencies they command as well as some politicians. As awareness of the massive potential opened up by the ability to manipulate genes and gametes begins to dawn, debates begin to emerge over the different constructions—Buddhist, Christian, Hindu and Moslem—that may be placed on the process of human genesis in a multi-ethnic and multi-faith nation such as Sri Lanka. Whilst the data presented here are modest in scope, it is clear that they have far wider implications. The way that doctors and physicians make sense of the new technologies, drawing upon their own values, philosophies and beliefs, has profound consequences for the ways in which novel and challenging developments are incorporated into local policies and practices. It is clear that Western ethical models for the regulation and control of these developments will not map straightforwardly onto the practices we have referred to. Empirical work of the kind we have commenced here is vital, and particularly so when it comes to the development of local guidelines of the kind that are currently being drawn up in Sri Lanka. It is hoped that consideration of the many forms that local perspectives take will add a new dimension to the global debate which now surrounds the new genetics and assisted reproductive technologies.

Notes

1. Journals that are developing a specific focus on comparative bioethics include *Eubios Journal of Asian and International Bioethics*, *Bioethics* and *Ethica*.
2. The National Science and Technology Commission (NASTEC) is the apex science and technology advisory body to the government of Sri Lanka.
3. The collaboration is between Professor Rohan Jayasekara and Dr Vajira Dissanayake of the Human Genetics Unit, University of Colombo Medical Faculty and Dr Bob Simpson, University of Durham, Department of Anthropology. The initial pilot for this study was carried out in summer of 2000 with financial support from the Nuffield Foundation (see Simpson, 2001).
4. Whilst there are no official figures for the current abortion rate, unofficial estimates put the number of terminations in the region of 700 per day (De Soysa, 2000, p. 46). The majority of terminations appear to be sought by older married women for whom contraception has failed. Amongst these women, there is a high rate of death (estimated between 10 and 30% of all maternal deaths) due to septic abortion (*ibid*).
5. Sri Lanka has recently completed a census of population and housing, the first since 1981. Preliminary results suggest that population growth has slowed to an average of 1.2% across the 18 administrative districts of the Island. In that time, the sex ratio has dropped from 103.9

in 1981 to 97.9 in 2001, suggesting a shift to the predominance of females over males (www.statistics.gov.lk).

6. Buddhism has several schools of teaching. Theravada is believed to be the teachings of the Buddha in its original form. It survives to this day in Southeast Asia, especially Sri Lanka, Burma, Thailand and India.

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