

New Reproductive Technology in India: Social Context, Legal Implications, and Health Outcomes

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ABSTRACT New reproductive technologies that include techniques associated with pre-natal sex determination, pre-conceptual sperm separation, *in vitro* fertilization and other similar techniques used for sex-selective conception have made advances during the last few decades. The paper discusses the ethical issues and social implication of these technologies with particular reference to Indian situations. Although pre-natal sex determination and sex selective abortions are illegal in India, the current laws must be revised for their effective reinforcement. The paper highlights that NRTs expose Indian women to additional health risk.

New Reproductive Technologies (NRTs)¹ have made miraculous advances during the past few decades, and have considerably influenced our understanding of reproduction, conception, pregnancy, birth and parenthood. However, the innovation and diffusion of NRTs have also caused a broad range of ethical and social issues stemming from the introduction of reproductive technologies into many societies have been extensively debated and explored in academic research (Gupta, 1991; Rodin and Collins, 1991; Shore, 1992; Strathern, 1992; Luthra, 1994;). The major themes of the ongoing global debate over reproductive technologies involve social and political struggles over family, kinship, and gender relations (Strathern, 1995), reproduction and motherhood (Ginsburg and Rapp, 1995), ethical issues concerning abortion rights, surrogacy, and parenthood rights (Stanworth, 1987; Dolgin, 1990) infertility and assisted reproduction (Franklin, 1995), and birth as a natural event (Shore, 1992). Although NRTs have been argued to be a scientifically objective and gender neutral means for providing fertility options, several researchers and activists have expressed concern over the potential misuse of NRTs for selecting the sex of the newborn. They

have pointed out that an unregulated diffusion and utilization of NRTs could have serious social and demographic consequences (Wertz and Fletcher, 1989; Luthra, 1993; Gillis, 1995).

During the last two decades, several public and academic debates point to the social, moral, health, and demographic impact of the innovation and diffusion of NRTs in India (Jeffery et al., 1984; Miller, 1985; Shukla et al., 1987; Khanna, 1997). Social activists and scholars have extensively documented the misuse of NRTs for pre-natal sex determination and sex-selective abortion, urging the government to regulate its availability and use in India (Ramanamma and Bambawale, 1980; Dube, 1983; Kumar, 1983; Jeffery et al., 1984; Patel, 1989; Parikh, 1990; Khanna, 1995, 1997). Recent changes in the technological and legal landscapes, in terms of the availability of newer techniques providing options for sex-selective conception, have renewed the urgency for governmental regulation of such reproductive procedures and for understanding their social implications in a timely and effective manner. Now it has become even more important for us to understand these issues from the point of view of the provider and the user of NRTs. Particularly in the Indian context, much remains to be learned about the availability and use of NRTs and the impact of the recently imposed government ban on the use of NRTs for prenatal sex determination (Kishwar, 1995; Walsh, 1996—Personal communication; Khanna, 1997).

Based on ethnographic data collected during 1993-94 in Shahargaon² (a pseudonym) -an urbanizing village in New Delhi, this paper provides community-specific information on the availability and use of NRTs, and examines the impact of government regulation of NRTs in the village and its surrounding areas. Participant

observation and unstructured interviewing among the residents of Shahargaon provided information on users' attitudes toward the ethical, legal, and social issues concerning the use of NRTs for prenatal sex determination and the mortality of sex-selective abortion. Structured interviews were conducted among the providers of such services in order to understand their views on the use of NRTs for the purpose of prenatal sex determination instead of genetic screening of the fetus for any congenital malformation. The core concern of this paper is an intent to continue the debate on the misuse of NRTs in India, especially on those techniques that are primarily used for the purpose of prenatal sex determination. Arguments presented in this essay broadly reflect the theoretical framework of critical medical anthropology that tends to view: "...health issues within the context of encompassing political and economic forces that pattern human relationships, shape social behaviors, condition collective experience, re-order local ecologies, and situate cultural meanings, including forces of institutional, national, and global scale. The emergence of critical medical anthropology reflects both the turn toward political-economic approaches in anthropology in general, as well as an effort to engage in and extend the political economy to health approach." (Baer et al., 1997:4).

Following the above suggestions of Baer et al. (1997), this paper is an attempt to situate reproduction and technology in the context of son preference and daughter neglect, as well as an effort to provide an analytical framework for examining the relationship between individual-level practices (microlevel) and state-sponsored policies (macrolevel) regulating NRTs in India. Firstly, the paper examines the cultural context and sociodemographic implications of prenatal sex determination and sex-selective abortion in a culture that exhibits a generalized preference for sons and neglect for daughters. Secondly, the paper explores the impact of the Prenatal Diagnostic Technology (PDT) Act passed by the Indian government in August 1994 banning the use of reproductive technology for prenatal sex determination and sex-selection abortion. Finally, the paper comments on the ways in which the range of available reproductive technologies and

procedures provide "legal" means for Indian couples to regulate their family composition.

SON PREFERENCE AND NRTs IN INDIA

The existence of a universal preference for sons (Winston, 1933; Williamson, 1960) has become a subject of renewed academic interest in the context of the worldwide availability and use of NRTs to select the sex of the newborn. In their study of the utilization of NRTs for prenatal sex determination of the fetus, Steinbacher and Gilroy (1990) observed that "This universal desire is currently being translated into reality in a growing number of countries through the use of various sex selection technologies. Cultural, political and economic forces contributing to the devaluation of women together with the strong preference for sons have led to the aborting of female fetuses as a means of sex selection. In India, data have been collected from medical institutions that administer prenatal sex determination tests and the aborted fetuses have been disproportionately female."

In India, numerous clinic-based studies have demonstrated an alarming increase in the use of amniocentesis and ultrasonography to identify female fetuses followed by abortion as a means of avoiding the birth of a daughter (Ramanamma and Bambawale, 1980; Jeffery et al., 1984; Kabra, 1986; Booth et al. 1994; Khanna, 1997). The issue of sex-selective abortion was brought to national attention in India when as early as 1983 it was reported that nearly 78,000 female fetuses identified through prenatal sex determination technologies were aborted from 1978 to 1982 (Patel, 1989). Similar reports in popular magazines and newspapers from all over the country made it quite clear that NRTs are primarily used to determine the sex of the fetus, and that female feticide had gone unchecked and unnoticed in Indian society for almost a decade.

A mass of evidence from research studies primarily carried out by voluntary organizations in India showed that NRTs were first introduced in New Delhi and Bombay in the mid-seventies. During the following decade, techniques for prenatal sex determination rapidly diffused throughout the country. By 1988, the city of Bombay had approximately 200 sex determination clinics diagnosing 30,000 to 50,000 female fetuses per

year. The doctors in these clinics were performing approximately 270 prenatal sex determination tests per month (Patel, 1989). Because of the easy accessibility and the relatively low cost of these tests, their popularity skyrocketed and the sex-selection industry started serving clients in the rural areas of India through several collection centres which send the samples of amniotic fluid through courier service to laboratories in the nearby cities (Pate, 1989).

In response to growing awareness of the extent of sex-selective abortion in India, many activists organizations, women's groups, and voluntary agencies condemned prenatal sex determination as a blatant misuse of NRTs for reinforcing patriarchal values that discriminate against women (Dube, 1983; Kumar, 1984; Patel, 1989; Shukla et al., 1987; Kishwar, 1995). In 1986, a determined campaign against the misuse of NRTs was launched by the Forum Against Sex Determination and Sex Preselection in Bombay. In order to generate public opinion against the increasing practice of sex-relative abortion, the forum activists effectively combined disturbing images of aborted fetuses with a strong anti-technology, anti-west, and anti-female feticide rhetoric condemning these practices. This activist group not only promoted public awareness, but also lobbied government to regulate the misuse of NRTs, such as amniocentesis, ultrasonography, and chorionic villus sampling, for prenatal sex determination. The argument for regulation the availability and use of NRTs has at its center the ways in which patriarchal values are allowing for a selective killing of women in Indian society, drawing similarities to practices such as female infanticide, dowry deaths, and widow burning.

A secondary argument against the practice of sex-selective abortion of female fetuses emerged more from the academic community, particularly from scholars interested in demographic and social implications of the misuse of NRTs in a country that already has a masculine sex ratio (Moen 1991; Weiss 1995). Scholars have predicted that the demographic impact of the spread of prenatal sex determination technology is likely to show up dramatically in the all-India census in the year 2001, and that as fertility rates in India approach those of the west-

ern countries, selective abortion of female fetuses will further accelerate the existing deficit of females in the Indian population (Kishwar, 1995; Weiss, 1996). In a recent study of the Indian census data and hospital records to examine the extent to which India's masculine sex ratio can be attributed to prenatal sex determination and sex selective abortion of female fetuses, Weiss (1996) suggests that more than one million female fetuses were aborted between 1981 and 1991, and that sex selective abortion tends to supplement the effect of female infanticide.

In the past several years, scholars have cautioned Indian planners and policy makers that a drastic increase in the skewing of the Indian sex ratio, primarily from the misuse of NRTs, will have serious social implications including the further commodatization of women as producers and reproducers (Moen, 1991; Kusum, 1993). Using the argument of cultural preference for sons in India, these researchers have suggested that the misuse of reproductive technology for prenatal sex determination of female fetuses is likely to result in a serious distortion of the sex ratio in the Indian population. They have advocated or urgent and careful monitoring of the availability and use of NRTs, arguing that state-sponsored family planning policies promoting the ideals of a small family are likely to foster the use of NRTs and thus, tend to reinforce the existing son preference in India (Patel, 1989; Gupta, 1991).

In spite of the above suggestions by demographers and social scientists, several government and private health practitioners have hailed amniocentesis and ultrasonography as important tools in the promotion of birth and population control programs in India (Kishwar 15). Dr. Pai, a noted figure in the Indian family planning program, strongly advocated the use of sex-determination test for family planning and described female feticide as a possible "solution" to India's population problem (Balasubrahmanyam 1986:69). In 1981, the Family Planning Foundation of India advocated that in cases where women have one or more daughters, they could adopt for amniocentesis followed by abortion if the fetus happens to be female. It seems that the issue of prenatal sex determination tests has evoked deep feelings in India and there is no consensus. While several scientists and

doctors claim NRTs as representing "progress" and offering "choice," the opposition points to the gross unethical nature of reproductive technologies in India.

The Prenatal Diagnostic Techniques (Regulation and Prevention of Misuse) Bill 1991

In response to strong criticism of the limited government attempts to restrict the misuse of sex-selection technologies, a regulatory bill was initiated in the Indian Parliament in 1991 and passed by the Indian government in August 1994. In accordance with the Prenatal Diagnostic Technology (PDT) Bill, all genetic counselling and diagnostic centres in India need to be registered with state or federal authorities and follow the guidelines given in the Bill. The committee of experts responsible for the PDT Bill argued that the Bill will prevent the misuse of any of the prenatal diagnostic procedures for sex determination. According to the guidelines of the PDT Bill, prenatal diagnostic tests, such as ultrasonography, amniocentesis, and chorionic villus sampling, can be performed only on women that have high risk of having a genetically malformed baby, as assessed through her reproductive history, and only for the detection of a genetic abnormality. The PDT Bill dictates that under no circumstances can a clinician perform a diagnostic test for prenatal sex determination. The clinician is required by the law to explain not only the possible side effects and risks involved, but also obtain a written approval of a pregnant woman prior to the test. Attempting to ensure that the results of these tests are not used in deciding to abort a female fetus, the law prohibits any person conducting prenatal diagnostic procedures from communicating the sex of the fetus in any manner to the pregnant woman or her relatives. The PDT Bill also bans any form of advertising of prenatal diagnostic procedures as a means of determining the sex of the fetus.

In addition, the recently approved Prenatal Diagnostic Techniques (Regulation and Prevention of Misuse) Act prohibits any genetic counselling center, laboratory or clinic from performing any of the prenatal diagnostic techniques unless they register under this act (Report of the Joint Committee 1991). Any use of such techniques must satisfy one or more of the following

criteria which the act establishes:

1. The age of the pregnant woman is above 35 years.
2. The pregnant woman has undergone two or more spontaneous abortions or fetal losses.
3. During her pregnancy, the pregnant woman had been exposed to substances potentially harmful to the fetus such as certain drugs, radiation, infections, or exposure to certain dangerous chemicals or the pregnant woman has a family history of mental retardation or physical deformities.

Many scholars and activists have applauded this action and expressed hope that the PDT Bill will prevent the misuse of NRTs for prenatal sex determination of female fetuses. In spite of this optimism, given the political and administrative structures in India the enforcement of the PDT Bill is impracticable if not impossible. Instead, such an attempt to regulate the misuse of NRTs for prenatal sex determination is likely to increase the malpractice related to the marketing of prenatal diagnostic test. Furthermore, the illegality of NRTs will not only make Indian couples more vulnerable to economic exploitation and fraudulent medical practices, but also expose women to additional health risk. This skepticism over the boasted effectiveness of the law is shared by many other scholars and critics. In a recent article, Kishwar (1995:17) eloquently argues that: "It is time that we face the fact that the laws that have been enacted to prohibit prenatal sex determination will not work given and political and administrative level of function in our country. The more stringent law attempting to prohibit consensual behaviour, the greater the likelihood that it will be use primarily for making money by officials. The police know the location and activity of sex determination clinics; they collect regular bribes from the doctors as protection money, just as they do from brothel owners in states where prostitution is banned."

Although the Regulation and Prevention Act marks a step in the right direction for the goals of the activist movement against NRTs in India, such governmental regulation has also provided professionals and speculators in the reproductive technology industry with more control over women's reproduction and more power to exploit the culturally prescribed preference for sons

that exists in Indian society. Women are exploited as reproducers in Indian society but that exploitation until now generally occurred within the household. Women as social reproducers have now become a whole new realm of exploitation by speculators in the sex-selection technology industry. Huge amounts of capital are being invested into the industry with the hope of a greater return. The sex-selection industry has recognized the income potential in exploiting son preference in India. Now son preference has become the motivation for an expanding market in reproductive technologies. It is clear that an increasing demand for NRTs coupled with ineffective government regulation of the availability and use of reproductive technologies has led to economic exploitation of son preference and the marginalization of Indian women as reproducers.

Economic Exploitation of Son Preference and Family Planning

A direct consequence of the illegal use of NRTs for prenatal sex determination has been a sudden increase in the cost of prenatal sex determination tests. During 1993-94, a majority of doctors and clinicians providing prenatal diagnostic services in Shahargaon justified charging a higher fee for the test needed to be used toward the legal protection of the doctor and the clinic. When asked about their opinion on the banning of such tests, a majority of the women in Shahargaon felt that it will only make prenatal sex determination more expensive, but it will not stop anyone from using such tests. More than 65 per cent (N=83) of the total women (N=127) interviewed in Shahargaon responded that they were willing to pay a higher cost for the prenatal diagnostic tests.

Among Shahargaon women in the "under-45 age" category, 17 women (13.4%) had sex-selective abortions. Two women in the "30-45 age" category reported to have undergone sex-selective abortion; of the 15 women in the "under 30-age" category who had undergone sex-selective abortion three did it twice. Women in the youngest age category had repeated prenatal sex determination testing and sex-selective abortions. Thirty-six women (28.3%) had utilized ultrasonography to know the sex of the fetus,

and 22 fetuses identified as female were aborted between 1989 and 1994. Ultrasonography was identified by Shahargaon residents as the primary technique used for prenatal sex determination. In most cases, prenatal sex determination was used for higher order conceptions, especially when the women seeking a prenatal sex determination test already had a daughter. Shahargaon women never aborted a male fetus following its prenatal identification. In three cases, first daughters identified through ultrasonography were not aborted. None of the self-reported sex-selective abortions was performed for the first conception.

An indirect consequence of the PDT Bill has been the introduction of numerous "unregistered/illegal" clinics into the sex-selection industry primarily to provide cheaper diagnostic and abortion procedures. During 1993-94, there were three such clinics providing "quick and cheap" prenatal sex determination and sex-selective abortion services to the residents in Shahargaon and in neighbouring areas. The clinicians at these centres claimed to have acquired government license for providing prenatal diagnostic services through unconventional, scientifically reliable, and secret procedures that not only cost less, but also take less time. Additionally, the reproductive technology industry has also responded to the PDT Bill by separating diagnostic and abortion clinics. This new strategy allows for a profitable alliance between these specializing clinics which "refer" clients back and forth for the exchange of referral money. The following case study, although by no means typical of clinics offering prenatal sex determination services, clearly illustrates the above arguments:

A clinic in an urbanizing locality near Delhi claims to perform prenatal sex determination in "two minutes" and advertises its technique as "a quick and easy method of fetal examination." The technique does not involve amniocentesis or ultrasonography, but a blood examination of the pregnant woman. The clinic receives a pre-established kickback fee for referring families seeking sex-selective abortion to centres providing such services. The person who runs the clinic holds a doctoral degree in Biochemistry. On a usual business day, he meets with the

pregnant woman and her husband (or the accompanying relative) in the clinic and conveys the scientific reliability of the testing procedure. During this conversation, he collects information on the woman's pregnancy history and tries to develop a cordial relationship with the client and the accompanying relative assuring them that he understands their "needs and desires" and that "with the help of god they will be blessed with a son." At this stage, the clinician effectively combines scientific arguments and religious beliefs in order to exploit the client's desire to have a son. He then proceeds to collect a blood sample from the woman by pricking her finger with a needle and asks the client to wait outside in the patients waiting area. Back in the laboratory, he prepares a seamer slide of the blood sample, stains it, and observes it under a light microscope. Depending upon the woman's pregnancy history, i.e. the number of daughters, which in this case becomes a measure of the client's desperation for a son, the clinician discloses the result of the blood test to the eager client. In most cases, the result indicates the conception of a daughter. This dramatic disclosure is immediately followed by an assurance that the clinic can also take care of the client's "problem" by referring her to a known abortion clinic. In most cases, a referral is made either by a telephone call or with the help of a messenger. For each referral, the clinic receives a pre-established referral fee.

There are many such "unregistered" diagnostic clinics which, in conjunction with abortion clinics, commercialize on people's ignorance about the PDT Bill and the lack of knowledge about the scientific basis for prenatal diagnostic tests. More importantly, such careless and even dangerous diagnostic and abortion procedures expose women to serious health risks.

Contrary to the argument that the availability and utilization of NRTs are restricted to the urban areas in India, this research suggests that it would be wrong to presume that the use of sex-selection technologies is primarily restricted to urban centres and that "class factors" restrict access to such technologies. On the contrary, because of their compatibility with the Indian social, economic, and ideological fabric coupled with wide advertising, NRTs have rapidly dif-

fused across state, class, and caste lines. In fact, the sex-selection industry is especially targeting urbanizing communities. One of the causes of the illegality is the removal of the clinics providing prenatal screening and abortion services from visible urban centres, to by pass the law enforcement authorities, to rural and urbanizing communities in which legal enforcement is less likely. In such communities the industry depends upon people's ignorance about the scientific and legal aspects of reproductive technologies. The industry is taking advantage of a market in which there is a change occurring from large to small families in response to process of industrialization. Smaller families have become adaptive as people abandon the labour intensive agricultural way of life in urbanizing areas and respond to the demand of a job-based urban economy and state-sponsored family welfare campaign promoting the ideals of a "small and happy" family. It is in this context of rapid urbanization, economic change, and state-sponsored programs reinforcing the idea of a small family that one must re-evaluate the misuse of NRTs in a society that has traditionally favoured sons over daughters.

NRTs and Women's Health

In a recent publication by the Ford Foundation, Saroj Pachauri (1994) draws attention to the gaps in our understanding of the social conditions that affect women's health. She suggests that more microlevel research is needed to plan appropriate intervention strategies aimed at improving the health status of women. Pachauri's recommendation is especially relevant when considering the possible health impact of unregulated and unsafe prenatal sex determination and abortion procedures on women's reproductive health in India. An increased use of prenatal sex determination and abortion, especially those performed under clinically unsafe conditions, will predictably result in a higher incidence of reproductive morbidity among Indian women. Reproductive tract infections (RTIs)³ are commonly introduced through unhygienic practices related to unsafe abortion and childbirth or when contraceptive devices are inserted or removed. Generally RTIs cause childbirth related

complications, perinatal infections in the newborn, and have become one of the leading causes of infertility among women during the last two decades (Dharmraj 1995). The risk of RTIs is now further increase due to an increased demand for prenatal screening and abortion especially at "unregistered" facilities where hygiene is compromised to reduce cost. Given the fact that, for the most part, women's reproductive health issues are not commonly discussed in India, it has now become even more important and urgent that we initiate an open dialogue on women's health in the context of "unsafe" prenatal sex determination and abortion practices. Since, ultrasonographic examinations, the primary technique used for prenatal sex determination in India, cannot be reliably performed before 13-14 weeks of gestation, the woman would undergo a sex-selective abortion during the second trimester, thus running the risk of exposure to infection and additional health complication.

Notwithstanding the legality of abortion in India, well-equipped and professionally operated facilities for the medical termination of pregnancy are not readily accessible to all women and many die due to complications resulting from unsafe procedures. The risk of an unsafe abortion is further increased by the poor health and nutritional status of women in India which, in turn, makes them even more vulnerable to a whole array of clinical risk factors. Indian women now face an increased risk of reproductive tract infection, and in the context of a generalized ignorance and social stigma associated with reproductive tract infections, they are even less likely to seek treatment for their reproductive health problems.

In Shahargaon two specialists of gynaecology and obstetrics are available, however, their services are primarily utilized for childbirth, prenatal sex determination, and sex-selective abortion. Rarely do Shahargaon women come to these clinics with problems related to reproductive tract infections. The sex-selection industry has also taken advantage of the existing social networks for health services at the community level. Primary Health Care (PHC) workers and village-level family planning workers/motivators usually act as carriers of information on reproductive technology and agents of several clinics

providing prenatal sex determination and abortion services in the area. PHC workers have been the chief source of information on the availability of prenatal sex determination services for many Shahargaon women seeking such tests. Ultrasonography and abortion services are easily accessible to Shahargaon residents because the costs of the services amount to less than one-third of an average family's monthly income. These clinics complete for customers by cutting anaesthesia and hospitalization costs, and by offering "packaged deals" involving a discount if a couple agrees to abortion at a clinic recommended by the diagnostic center. The gender-specific utilization of NRTs and the corresponding exposure of women to RTIs coupled with cultural constraints to seeking treatment for reproductive health problems, clearly points to the blatant disadvantage for Indian women.

Although the sex-selection industry and the marketing of NRTs present a "choice" to limit the family size and a means to fulfil the desire for sons, they also represent a clear case of the ways in which medical technologies can be used against women. According to Rothman (1984:33) "We will have to lift our eyes from the choices of the individual woman and focus on the control of the social system that structures her choices, which rewards some choices and punishes others, which distributes the rewards and punishments for reproductive choices along class and race lines."

Clearly, the increased availability and utilization of prenatal sex determination procedures and sex-selective abortion in India collectively represent an alarming trend of deteriorating conditions of women's health and marginalize them by ignoring their desires, choices, and status as individuals. The activist movement against the misuse of NRTs must broaden its platform to include women's health consequences of prenatal sex determination and abortion, especially in the context of an increased exploitation of women as reproducers by the sex-selection industry operating in the era of state regulation of reproductive technology. Perhaps, it is time to demand a major revision of the PDT Bill and an even stricter and more realistic enforcement of the law to prevent further misuse of NRTs in India.

NRTs and Sex-Selective Conception

The proposed regulatory act prohibits sex-selective abortion but does not prevent technological intervention before conception. To ensure the selection of a male fetus, the sex-selection industry in India is currently marketing new methods of sperm separation that ensure an XY fertilization. Since there is not sex-selective abortion involved, these procedures fall outside the parameters of the PDT Bill. One such readily available procedure for sex-preselection involves a combination of Ericsson's sperm separation technique and ultrasonography. Dr. Ronald Ericsson, a reproductive physiologist in the US, visited India in 1986 to promote his technique which allows the separation of X-carrying sperm from Y-carrying sperms. The Y-chromosome contains 3.5 per cent less DNA than and X-chromosome and can be distinguishably stained by the quinacrine (Holmes and Hoskins 1987:15-16). Once the sperm has been separated by using differential centrifugation, the woman has to undergo an ultrasonographic examination to pinpoint the exact time of her ovulation. By injecting the woman with the primarily Y-carrying sperms, the conception of a male fetus can be assured. This technique is readily available in many urban centres in New Delhi. In many rural areas, however, several clinics are pretending to have mastered the technological knowledge of sperm separation and are charging large amounts of money from those seeking an XY conception. In his book, *Getting Pregnant in the 1980s*, Dr. Ronald Ericsson (1982), while discussing the social impact of the sperm separation technique, argues that, "It has been suggested that the availability of successful sex preselection techniques would lead to disruptions in social patterns. If the preference for boys was translated into a higher male-to-female ratio, it might lead to an increased incidence of violence in society as males are placed in fierce competition for the fewer females. It also might lead to increased male homosexuality and to an increased use of prostitutes. Whereas surveys in the United States suggest that most parents would prefer an equal of children of each sex, feminists have voiced concern that many couples would choose to have a son first. Because firstborn children seem to be high achievers, females then would

be at an added disadvantage, being deprived of the firstborn position. Only 1 per cent (13 of 980) of couples who corresponded with use concerning sex preselection were interested in influencing the sex of a firstborn child. In addition, the current method in clinical use for sex preselection (separation of sperm on an albumin column) is not 100 percent effective and although not a complicated procedure, it does require technical equipment, artificial insemination, and a fee is charged. For these reasons its use will never be sufficiently widespread to significantly affect the sex ratio."

In spite of Ericsson's assertion that the limited availability of the sperm separation technique and the accompanying high cost will restrict its misuse, this particular technique and its several derivatives are now available in most urban and urbanizing areas in India.

Closely following the principle of Ericsson's technique, numerous drugs and techniques ensuring the conception of a male fetus have been recently introduced in Indian markets. The most popular of these drugs in an Ayurvedic product marketed under the trade name SELECT. According to the Gujarat-based Vasu Pharmaceuticals, the manufacturers of SELECT, this drug has the potential to change the sex of the fetus. A pregnant woman need to start the recommended dosage 45 days after her last menstrual period for a duration of two weeks. The manufacturers claim that it can change the sex of the fetus from female to male after conception. The promotion literature claims that SELECT is a panacea to India's social and population problems in the sense that it will support family planning, discourage the dowry system and the birth of unwanted daughters, reduce discrimination against women, and fulfil the lasting desire of a couple to have a son. The exact chemical composition of SELECT is unknown and despite claims by its manufacturers, there is no textual reference to SELECT in any Ayurvedic text. A Gujarat-based consumer group filed a law suit against Vasu Pharmaceuticals and the drug was banned in 1991. Despite the ban on the marketing and use of SELECT, the drug is easily available and is in high demand (Unnikrishnan 1993). The introduction of SELECT demonstrates an attempt by the local entrepreneurs to introduce an indigenous

version of the western sex-selection technology and to capitalize on the traditional preference for sons in India.

Nonavailability of Reliable Information on NRTs

With the sudden diffusion of NRTs in India and the corresponding introduction of the PDT Bill by the Indian government, it has become increasingly difficult to monitor and get reliable information to identify target populations using or providing services for sex-selective conception, prenatal sex determination, and/or sex-selective abortion. Because clinicians recognize the threat of revealing their activities related to NRTs, accurate data on the availability and use of NRTs will be difficult, if not impossible, to collect. Any real solution addressing the heart of the social problem behind sex-selective abortion has now evaded us. Furthermore, misreporting and underreporting are likely to be high in surveys related to prenatal sex determination and sex-selection abortion or conception.

In 1994, the author contacted 13 clinics providing diagnostic and abortion facilities in New Delhi, but doctors in only two clinics volunteered sketchy information about the involvement of their facilities in prenatal sex determination and sex-selective abortion. The rest claimed that they were not conducting such tests and were only providing abortion services. Since they themselves did not conduct prenatal sex determination tests, they were not responsible for sex-selective abortion. It is suspected that the incidence of prenatal sex determination and sex-selective abortion is underreported. Despite intensive fieldwork involving rapport building, such information was not given readily by the informants. The narratives of the informants were provocative and moving in terms of the personal anguish and pain they felt while seeking prenatal sex determination with the intent to rule out the conception of a daughter. On several occasions, they directly refused to answer questions related to the use of ultrasonography for prenatal sex determination claiming that their answers could be used against them in the village and fearing that someone might report them to the authorities. The providers of NRTs in the village expressed sympathy toward women seeking sex-selection services and described the government

intervention as adding to the existing burden for the Indian woman. While strongly denying their involvement in providing sex-selection services, a majority of clinicians expressed a deep sense of obligation toward women seeking the means to exercise their rights to have a son, and openly challenged the "illegal" status of NRTs. They recounted several complicated and life-threatening cases when women had sought unsafe means of prenatal sex determination and abortion at the hands of untrained individuals, and summarily blamed the legal system for health risks faced by Indian women.

CONCLUSION

In a recent article, Rashmi Luthra (1994) argues that sex-selection technology in India is a case of problematic diffusion. Technology that fits the social fabric of a society will widely distribute into the population regardless of obstacles and socioeconomic differences. Clearly, NRTs represent an example of a technology that fits the existing patriarchal social mold of Indian society. Sex-selection technology facilities and realizes son preference especially as India experiences processes of industrialization and global capitalism. Everything that is technological/modern/western gets the status of being good, reliable, and prestigious. In addition, NRTs provide a private and reliable means of knowing about the sex of the fetus and of having a desired sex composition of children. Since the decision to use prenatal sex determination and sex-selection abortion is primarily made within the family context, Indian couples are more likely to use NRTs to have a desired family composition.

Although prenatal sex determination and sex-selective abortion are illegal in India, the current laws must be revised for effective reinforcement. Given the present state of the PDT Bill, the misuse of the sex-selection technology is likely to increase, thus exposing Indian women to additional health risk factors. In its present form, the PDT Bill has only led to increased economic exploitation of son preference by fraudulent medical practices touted to be reliable and considered to be prestigious. The author is by no means suggesting that the laws regulating the availability and use be rescinded. Instead, he is expressing a need to expand the platform

of advocacy against the misuse of NRTs to include issues of economic exploitation, fraudulent medical practices related to NRT procedures, preconceptional sex-selection, and most importantly, women's reproductive health. At an epistemological level, a reexamination of the often unchallenged dominance of the discourse of western medicine and reproductive technology in terms of the underlying assumptions is called for. Finally, the paper calls for an urgent more stringent regulation of NRTs in India, and proposes to include women's health in the activist agenda against the misuse of NRTs for prenatal sex determination and sex-selective abortion.

Notwithstanding the initial or primary purpose for which a specific technology is developed, the additional or secondary uses of that technology will always be contested and realized in a social context instead of a laboratory or scientifically defined ideal situation. The increasing availability and use of NRTs in India and the alarming trend of female feticide reinforce the notion that reproductive technologies are never gender neutral. In the Indian context, this otherwise labelled "gender-neutral reproductive technology" gets immersed into the local cultural politics of gender where the girl child is increasingly considered a drain on family resources. The paradoxical situation of the diffusion, availability, and utilization of reproductive technology in India involves the simultaneous embracing of modernity and reinforcing of traditional patriarchal values. As a result of this paradox, Indian women are caught between patriarchal intensification and the innovation of reproductive technology. Any effective intervention strategy to stop the misuse of NRTs in India must include substantial changes in parental attitude toward girls, endangering the various programs for socioeconomic development and health promotion, as well as a revision and realistic enforcement of the laws regulating the misuse of reproductive technology for prenatal sex determination and the sex-selective abortion of female fetuses.

NOTES

1. The term new reproductive technology (NRTs) primarily includes techniques associated with prenatal sex determination (ultrasonography, amniocentesis, and chorionic villus sampling), preconceptional sperm separation techniques, in vitro fertilization, and other similar techniques used for sex-selective conception (see Corea et al. 1987 for further information).

2. The term Shahargaon literally means "city-village." The village was established approximately 250 years ago. Jats form the largest social group in the village accounting for 72.8% of the total population. All sample women belonged to the Jat community. The fieldwork was funded by a grant from the Wenner-Gren Foundation for Anthropological Research (Grant no. 5612).
3. Reproductive tract infections, including cervical cancer, acute and chronic infections of the uterus and fallopian tubes, and sexually transmitted diseases, constitute an alarming condition of epidemic proportions among Indian women. According to recent surveys, around 80,000 new cases of RTIs among women are reported every year in India resulting in approximately 8000-16000 cases of infertility (see Gittelsohn et al. 1994 and Dharmraj, 1995 for further information).

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