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Female Foeticide in Rural Haryana

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Female foeticide over the last 15 years distorted sex ratios as birth in several Asian countries. Foetal sex determination clinics have been established in India over the last 20 years in northern and western cities. Presented here is the outcome of an intensive study of the abuse of prenatal diagnostic techniques for sex selection in the a rural population of 13,000 in Rohtak district. Parents tend to be calculative in choosing the sex of the next child and the decision is based on the birth order, sex sequence of previous children and number of sons. Transfer of reproductive technology to India is resulting in reinforcement of patriarchal values as professional medical organizations seem to be indifferent to ethical misconduct.

I
Introduction

STRONG preference for sons over daughters exists in the Indian subcontinent, east Asia, north Africa and west Asia unlike in the western countries [Muthurayappa et al 1997, Lancet 1990, Okun 1996]. People realise smaller family sizes with relatively greater number of sons by abuse of medical technologies. Pregnancies are planned by resorting to 'differential contraception' - contraception is used based on the number of surviving sons irrespective of family size [Okun 1996]. Following conception, foetal sex is determined by prenatal diagnostic techniques after which female foetuses are aborted [Park and Cho 1995. Arora 1996].

China adopted a 'one child family' norm in 1979 and the phenomenon of millions of 'missing girls' was recognised by early 1990s [Coake and Banister 1994]. Female foeticide was a major cause of this imbalance. As fertility declined rapidly in east Asian countries (South Korea, Taiwan, Hong Kong), selective abortion of female foetuses increased, leading to rising sex ratios at birth (SRB) (male/female) over the last 10 years [Park and Cho 1995].

In India the population sex ratio which was 1.03 in 1901 census rose relatively consistently to 1.08 in 1991 [National Commission for Women 1994]. Indian medical researchers who pioneered amniocentesis in 1975 said that it would assist those Indian women who keep on reproducing just to have a son; although this may not be acceptable to 'persons in the west' [Verma et al 1975]. Since then the contribution of sex determination tests (SDD to the rising sex ratio has been

vigorously debated [Lancet 1983, Chhachhi and Satyamala 1983, Kumar 1994]. While urban feminists demanded legislation against SDT, several social scientists felt that SDT had little impact on sex ratio [Forum against Sex Determination and Sex Preselection 1993, Rajan et al 1992].

According to the 1991 census, 15 of the 20 districts with the highest child (0 to 6 years) sex ratios were in the states of Haryana and Punjab in northwest India. A well known demographer suggested that the distortions in child sex ratios in the northwestern region for the last 100 years could be due to biological peculiarity of these women to have a highly distorted sex ratio at birth, in favour of boys [Premi 1994]! However, UNICEF argued that "female foeticide is reported to be a cause for adverse sex ratios in some Indian districts in the 1991 census" [UNICEF 1994]. Therefore. we selected villages from one such district in this region to investigate if indeed SDT were being performed and if so, to measure its impact on sex ratios. We examined the role of doctors, and also considered the contributions of contraception and of the social practice of female infanticide in skewing sex ratios.

II
Subjects and Methods

Geographical Location and Background

This study was initiated in June 1996 in six villages of Rohtak district in Haryana. Haryana was part of the composite Punjab state till 1966. This region witnessed tremendous economic progress over the last 30 years due to 'green revolution' [Singh 1997]. Haryana's per capita income is among the highest and fastest growing in the country [UNDP 1997]. Consequently income poverty reduced by more than 50 per cent. But the Anthropological Survey of India reports that the status of women in Haryana continues to be bad.

Haryana Vigyan Manch (HVM) has been active in promoting literacy. It worked with the district administration (1991-95) and succeeded in enrolling 1.15 lakh illiterates in the literacy campaign. Ninety per cent of the neo-literates and their instructors were women. HVM provided medical relief during floods and epidemics. It organised successful public campaigns in Rohtak to get clinics to remove advertisements promoting foetal sex determination [Chowdhry 1994]. After literacy efforts, more villagers started coming to the Medical College Hospital where the second author works.

Selection of Study Villages

Following completion of the literacy endeavour in 1995, HVM undertook a survey in 36 villages where there was good community participation. This was motivated by the impression of the literacy activists that in some villages about half of the pregnancies were terminated after SDT because the foetus was female. As the enumeration was done by the village activists only limited information on children was elicited. Demographic data such as birth order of children, timing of pregnancy outcomes; and assessment of the completeness of the survey were not available from this attempt. This field research is therefore a systematic effort to follow up on indications of rampant female foeticide.

Given the sensitive nature of induced abortions and that it is a criminal offence to do SDT we could not undertake a truly random survey of women in the district. We wanted to obtain reliable information on deliberate termination of female foetuses and neglect of girls from the women themselves. Our attempt was to identify villages where there was greatest likelihood that communities would trust our intentions given our past social commitments. An open dialogue on SDT is possible only when women could confide about such matters without fear of being victimised. Therefore, we chose to select villages where we had the most respected women literacy activists. These women have developed excellent rapport in their villages. Some of these empowered women later got elected as members and even chiefs of village panchayats. The study villages were identified by asking the three district literacy women co-ordinators who independently ranked the women activists present in the 36 villages. The six study villages lie in blocks of Rohtak out of the total 12 blocks. On completion of the study, this district (original Rohtak) was subdivided into Rohtak and Jaghar districts. Today, our study villages lie in both the new districts.

III
Methodology

Discussions with medical practitioners and others

First we interviewed leading obstetricians, medical practitioners of SDT in Rohtak and women doctors of departments of obstetrics and gynecology (OG) and radiology of the Post Graduate Institute of Medical Sciences (locally called Medical College Hospital and henceforth referred to as MCH). We ascertained their perceptions and involvement in SDT. The role of ultrasound scans in antenatal care was ascertained. They were asked if SDT could result in raising the status of women . We met with about I 50 village level literacy activists in Jind district along with a senior medical officer to be informed of SDT practices. Jind is adjacent to Rohtak and has the highest sex ratio in Haryana state.

Interviews with individual study women

To reduce recall errors. we confined interviews to women who experienced a pregnancy outcome in the last five years rather than to all village women. There were 1.022 eligible women. The criterion of using pregnancy outcome in the last five years included almost all outcomes in the study villages in the recent past, as the average interval between successive births in Haryana is 28 months [NFHS 1993]. Our sampling excluded just four women who had a previous pregnancy outcome and were currently pregnant. They were excluded as they experienced no outcome in the last five years. The entire history of pregnancies of study women is necessary for us to understand family building strategies and to obtain accurate birth orders of recently born children.

Women were interviewed at their homes in the presence of the local woman activist. Pregnancy history was elicited from each study woman, beginning with the last outcome. This demographic method is known to produce excellent results with minimal loss of information. We asked very few questions in order not to be suspected by the community as accomplices of the health department. From our decades of contact with rural women, we knew that any suspicion of being associated with the coercive 'family planning' programme would make women unwilling to reveal sensitive aspects of their reproductive history. We deliberately avoided asking individual women whether they went for SDT as we did not want to make women feel guilty for not bearing the desired number of sons. Rural men blame women for not producing enough sons. Some husbands married a second time because the first wife did not bear a son.

Of these interviews 98.9 per cent were conducted by trained local women. Nearly 50 per cent of the interviews in each of the six villages were conducted by the same interviewer. No study woman refused to co-operate for individual interviews.

Validation of information

We obtained government sources of information on vital events to validate the reported information on deaths. We independently contacted the anganwadi worker (AWW), the female health worker (FHW) and the chowkidar (functionary reporting to police). As complete records were available only for recent years we had to limit validation to past five years. AWW and the chowkidar were resident in the village but FHW resided in Rohtak town. We went back to the study women in case of any discrepancy between the information they reported and the official records.

Dialogue with the communities

We shared the findings with village women in 22 group meetings. On an average 20 women attended these sessions in each hamlet. We sought their explanation for any observed gender imbalances. We asked about discrimination against girls. In areas where there was no distortion of SRB, we enquired if the practice of female foeticide was prevalent.

Outcomes

In the course of field work. qualitative information and sociological data related to the practice of female foeticide were obtained. These strengthen some of the findings presented like caste differentials in foeticide. They also throw light on the fact that foeticide is not an isolated phenomenon but one of several ways patriarchy demeans women; others being violence against women [Jejeebhoy and Cook 1997], anti-women inheritance practices. customary marriage conventions which result in a significant proportion of women being married before 18 years, and coercion of widows to undergo levirate marriages facilitated by state administrative directives. However, for brevity, only data on sex ratio distortions and information related to abuse of medical technology by doctors are presented here.

In this paper we do no consider sophisticated reproductive technologies such as X- Y sperm selection or pre-implentational genetic diagnosis (PGD) which enable families to choose the sex of the child without having to resort to abortion [Ramsay 1993. Parikh 1998]. In X-Y separation, male sperms are separated and are used to fertilise the egg. In PGD the pre-embryos are sexed for the selective destruction of the female pre-embryo (female embryocide). As the validity of these methods appears to be uncertain outside the research labs which developed them. Also these very expensive methods are available at present only in a handful of clinics in a few cities.

Table 1 Characteristics of Study Families (N=1017)

Characteristics	Variable	Values	
Demographic			
	Wife: Mean age	25	
	Husband: Mean Age	25	
	Children: Mean no	2.60	
	Sons: Mean no	1.28	
	Abortion (%)	10.3	
Educational		**Wife**	**Husband**
	Illiterate	41.0	9.3
	Primary and neoliterate	7.0	3.4
	5-10 years of school	47.2	68.9
	11-12 years of school	5.6	12.3
	College	1.7	6.1
Social (Per Cent) Cast			
	Harijan	23.6	
	Artisan and minor	10.6	
	Brahmin	4.3	
	Jat and yadav	51.5	
Second Marriage	Husband	3.4	
	Wife	1.2	

Table 2: Percent Women Sterlized by Numer of Survivin Children vs Number of Surviving Sons

No. of Surviving Sons							Families (N)
		0	1	2	3	4	
No. of Surviving Children	0	0					27
	1	0	3				258
	2	2	14	51			336
	3	0	36	76	78		246
	4	0	20	71	44	0	102
	5	0	30	42	100	0	25
	6+	0	20	33	100	50	19

IV
Results

Virtually all (99.5 percent) study women were interviewed and 94 per cent of the respondents were mothers themselves. The social, demographic and educational characteristics of families of these women are described in Table I. The duration of cohabitation after marriage ranged from one year to 30years (mean = 8.7). Thirteen women had children who were already married. Jats and yadavs are the cultivating castes who own most of the land. Harijans are the poorest section in this agrarian society; and are primarily labourers of the landowning castes. There is gross disparity between the educational status of men and women.

The pregnancy outcomes reported by the women were 2,642 live borns, 48 still births and 272 abortions (243 spontaneous and 29 induced). Of liveborns 66.5 per cent were of orders 1 and 2; only 1.4 per cent of children were of orders greater than 6. There were thrice as many families having more than two surviving girls as those having more than two sons (110 vs 37 respectively). The study women had a maximum of five liveborn sons whilst the maximum number of liveborn daughters was nine. Just 14 per cent of families account for 34 per cent of girls while having only 21 per cent of boys. Over 48 per cent of mothers who reported deaths in the cohort born in the past five years were not captured by the government workers. The official records revealed that only two mothers had not reported the deaths (one female each) of their children to us. Subsequently both mothers confirmed that the deaths did occur.

The onus of contraception was almost entirely on women. Tubal ligation (sterilisation) was virtually the only form of contraception used (270 women vs one man). The percentage of sterilised women increased as they had more surviving sons (Table 2). Such a strong rising trend was not evident with increasing number of girls. Just one mother got sterilised with no surviving boys while 69 mothers who had no surviving daughters got sterilised. Furthermore, the family size and sex composition of the surviving children of women who were pregnant (N= 129) at the time of interview indicated that the rates of pregnancy were higher among women who had relatively less number of surviving sons than daughters. Within each family size, the current rate of pregnancy were five to six times higher for mothers who had no sons as compared to mothers who had several sons.

A manifestation of intense son preference in a population is that for a given family size the sex ratio of the last born child will be greater than 1.06 (i e, skewed towards male). This is demonstrated by using the 'gender preference indicators', family size sex ratio (FSSR) and the sex ratio of the last born child (LCSR). Family size refers to the total number of children liveborn. Table 3

indicates the sex ratio for each family size. The FSSR monotonously declines as the family size increases from one to ten. While the LCSR is generally more elevated than that of the FSSR. Both FSSR and LCSR are much higher for completed (sterilised) families (Table 4) with the exception of birth orders greater than five where due to small sample sizes the ratios are not stable.

A different strategy which some parents adopt to limit family size of surviving children and to eventually have the desired number of sons is female infanticide [George et al 1992]. Direct infanticide refers to killing of infant usually immediately after birth. Indirect infanticide is death caused a little after birth, due to deliberate neglect. This could be by inadequate child care, or by poor food related practices or health related neglect.

Of the 2,642 Iiveborns, 2,327 children were still surviving at the time of the interviews (Tables 5 and 6). We confine detailed examination of mortality to the cohort born in last five years as the recall errors are minimal for recent events and also because records for validation from official sources were only available for this period. Further, this cohort represents virtually the total population of preschool children in the villages. For this cohort, both sex ratio at birth (SRB) and sex ratio of surviving children at the time of survey are 1.20. Mortality data suggests that there is no excess girl mortality in the early neonatal or late neonatal phase (Table 6). But there appears to be excess girl mortality in the post-neonatal phase and girls are at risk of significantly greater mortality after the first year of life. Ethnographic information indicates the existence of direct female infanticide in the study villages and 41 percent of the female early neonatal deaths are due to direct female infanticide. Excess female mortality in the postneonatal and later childhood suggest the occurrence of indirect female infanticide.

Disaggregation by caste indicates that there is no excess post-neonatal girl mortality in harijans but exists among the upper castes. Another indicator of deliberate discrimination against girls is the survival of liveborns in twin pairs. The women reported that 16 twin pairs were born alive (23f+9m). The mortality of the females was higher than that of males (57 per cent vs 44 per cent). One manifestation of discrimination against girls is- the observation that the interbirth interval between successive liveborn children is shorter if the preceding child is female. This observation has been reported from Haryana state also [NFHS 1993]. We found greater discrimination in upper castes as compared to harijans (difference is 48 days vs 29 days).

Demographers consider the SRB of children born in last five years as the most sensitive index of current gender imbalance at birth in the society. Table 7 suggests that SRB for all birth order for recently born children are masculine

including the first birth order. The SRB for harijans (lowest caste) was 1.02; whilst among upper castes it was 1.27. The SRB of upper caste children rose from 1.26 to 1.89 as birth order went up from 1 to 5 (above 5 numbers are too small and therefore the ratio not dependable). A similar rising trend was not seen in harijans. The SRB kept increasing over the last five years among upper castes. It increased from 1.15 to 1.42 from the first 2.5 years to the last 2.5 years. In fact, in the last year, the SRB was as high as 1.80. Apart from birth order the sex composition of the preceding born children seems to be an important determinant of the sex of the next child (Table 8) in the upper castes. Within each birth order, sex ratio of the next child increases as the number of preceding girls increases. (We stopped at order 5 as there are very few children to fill the increasing m/f combinations). For each birth order, generally the ratio is often closer to the natural sex ratio (1.06) when the preceding number of male children is the highest. For families with no boys the SRB of the next child increased from 1.47 to 2.50 as the preceding number of girls went up from one to four.

Table 3: FSSR and LCSR for all Families

Family Size	Liveborn			
	M	F	FSSR	LCSR
1	134	95	1.41	1.40
2	359	259	1.39	1.33
3	352	347	1.01	1.49
4	233	303	0.77	1.48
5	120	165	0.73	2.39
6	45	63	0.71	1.43
7	36	55	0.66	1.50
8	17	31	0.55	0.50
9	3	15	0.20	0.0
10	1	9	0.11	0.0
Total	1300	1342	0.97	1.44

Table 4: FSSR and LCSR from Sterlized Families

Family Size	Liveborn			
	M	F	FSSR	LCSR
1	3	0	*	*
2	115	21	5.48	5.60
3	193	116	1.22	2.25
4	116	116	1.00	2.93
5	50	60	0.83	5.00
6	21	27	0.78	1.00
7	14	14	1.00	1.00
8+	3	16	0.19	0.0
Total	515	376	1.37	2.91

*Note: * Ratio could not be calculated as denominator is 0*

We presented the results of individual women interviews at discussions held in the hamlets. There was universal awareness of SDT and most knew where to go for the tests and abortions. In upper caste hamlets there was open admission of the widespread practice of female foeticide. In a few places the women blamed doctors who are doing this for money. Some women complained that their families' first concern following pregnancy is to put pressure on them to determine the sex. If it is a boy then only the need for 'ante-natal care is raised. In harijan areas where the distortions in sex ratios were less- table 7), there were denials about the practice.

From our dialogue with Rohtak doctors the following emerged: ultrasonography is abused for sexing foetuses. More doctors are buying ultrasound machines and some are taking it in cars to villages. The only difference after the national law banning the test was passed in 1994 was that cost of the test doubled (now about 900 rupees). Almost everybody including women MCR doctors felt that selective abortion of female foetuses would increase the status of women. They were unanimous in the positive role of ultrasound in normal pregnancies. The only dispute between the radiologists and the obstetricians of MCH was on the issue who was most competent to do the scanning! Ultrasound is used in the MCH for routine confirmation of pregnancy as problems were experienced in getting kits for the urine test. Neither does the MCH reveal the sex of the foetus nor conduct sex selective abortions. Following popularity of sex selective abortions, the OG department decided a few years ago not to train their postgraduates to do mid trimester abortion as it was felt that students would later be practising female foeticide. However, they were forced to rescind the policy after two years when they started getting referrals of botched abortions from their alumni. This decision was reversed in the interests of the lives of mothers.

Jind activists told us about the widespread practice of female foeticide. Despite Jind being one of the most backward districts in Haryana, ultrasonography, a modern technology, is extensively abused.

V
Discussion

Families continued to have children till they had adequate number of surviving sons. Consequently small families had more sons while large families had more daughters. That family size is inversely related to the FSSR suggests differential stopping by contraception (Table 3). It appears that most women want to have at least two sons. When two surviving sons are ensured nearly 50 per cent of women use sterilisation (Table 2). There is some evidence that with two sons and one daughter nearly 75 per cent of women use sterilisation. Our findings about completed families (sterilised women) are consistent with that reported for India [Arnold 1996]. Sex ratio of surviving children of sterilised couples are significantly higher than that for couples not using any contraception (1.25 vs O.97). The marginal excess of girls in our total study children (1342 f vs 1300 m) is itself a reflection of intense son preference. Our sample consists of all women in the villages who had a pregnancy outcome in the last five years and the study children comprise all their children; and this included some mothers who were desperate for sons; for instance, seven were willing to have six to nine girls just to have one or two sons.

It is imperative to examine the role of female infanticide as it was prevalent earlier in this region [Chowdhry 1994]. There have also reports of its persistence in the contemporary times [Kakar 1980]. Though direct infanticide has been known for centuries, systematic investigation of the phenomenon is recent [George el al 1992, George 1997]. We have an estimate only from Tamil Nadu state, where direct female infanticide accounted for 8 to 10 percent of all infant deaths in 1995 [Athreya and Chunkath 1997]. Direct infanticide affects just 0.99 per cent of our liveborn females and therefore can account for only a fraction of the observed genderimbalance in surviving preschool children. The existence of indirect female infanticide in our area is consistent with the finding of excess girl mortality in Haryana state [NFHS 1993]. The deaths were disproportionately high among higher birth order children. This pattern has been reported from many parts of the subcontinent [Das Gupta 1996]. There is no known biomedical reason to explain the observed higher risk of mortality for females born in a twin pair. Village women rationalised the excess mortality of females by saying that mothers can take care of only one child. Such unspoken social sanction for severe neglect of females within a twin pair has been witnessed in south India by the first author and also reported by others [Miller 1985]. The interbirth interval after a girl is shorter because girls are breast-fed for a lesser period than boys (19 per

cent less; from state data [NFHS 1993]). After consideration of mortality experiences we conclude that past mortality of girls cannot explain the masculinity in sex ratios of surviving children (the higher post-neonatal girl mortality is offset by higher early neonatal boy mortality).

Table 5: Sex Specific Survival of Liveborns by Birth Cohorts

Birth Cohorts	Survivors		Dead		Total	Liveborn
	M	F	M	F	M	F
< 5 years	787	654	66	54	853	708
>= 5 years	358	528	89	106	447	634
Total	1145	1182	155	160	1300	1342

Table 6: Sex Specific Death Rates by Age at Death

Sex\Age at Death dates	Death Rates			
	0 to < 7	7 to < 28	28 to < 365	365
M	3.99	0.70	2.58	0.47
F	2.40	0.71	2.97	1.55
Total Dead (N)	51	11	43	15

Table 7: SRB by Birth Order and By Caste

Caste/ Birth Order	Sex Ratios at Birth						Total	Total (N)
	1	2	3	4	5	6+		
Upper Castes	1.26	1.19	1.34	1.25	1.89	1.25	1.27	1169
Harijan	1.15	1.04	0.77	1.15	1.09	1.06	1.02	392
All Castes	1.24	1.16	1.16	1.22	1.59	1.14	1.20	1561

Table 8: Upper Castes SRB by Birth Order vs Preceding Number of Children by Sex

Birth Order	Proceeding Number of Children by Sex			
	Males	Females	N	SRB
1	0	0	364	1.26
2	1	0	189	1.01
	0	1	175	1.47
3	2	0	29	0.93
	1	1	139	1.32
	0	2	72	1.57
4	3	0	2	1.00
	2	1	20	0.25
	1	2	69	2.25
	0	3	26	1.60
5	4	0	1	*
	3	1	5	1.50
	2	2	17	1.13
	1	3	22	2.67
	0	4	7	2.50

*Note: * There was no girl in this group and therefore the ratio cannot be calculated.*

However, mortality data provides corroborative evidence for deliberate discrimination against girls. Demographically, SRB will not be affected by differential contraception but the sex ratio of the last born child will be higher than normal [Coale and Banister 1994]. LCSR is masculine because women who have not had enough sons continue to bear children until they have the right number of boys when they undergo sterilisation. The observed sex imbalance in children born over past five years in 'upper castes' can only be due to selective abortions of female foetuses as we have ruled out other causes. Further, in group discussions upper caste women confirmed that abortions of female foetuses were taking place. The rising trend of SRB over the past five years suggests an increasing incidence of female foeticide in the villages. That increasing numbers of boys are being born over recent years is evident from sex differentials in chronological age of liveborn children. Among upper castes, boys are significantly younger than girls by 66 days (N= 1169, p=0.03) while the difference in harijans is only 39 days, which is not statistically significant (N=392).

A sex ratio of 1.27 suggests that 16.8 per cent of female foetuses have been aborted among upper castes in the last five years (taking 'normal' SRB as 1.06). This is an underestimate of the current rate of sex selective abortions. Firstly, we have downplayed the dramatic rise in SRB by averaging over five years (last

year: 1.80 vs 5 years= 1.27). Secondly, sex determination is done by poorly trained ultrasound imagers. Just as in other nonwestern countries a majority of Indian imagers have inadequate training [Mindel 1997]. In fact there is no formal certification of ultrasound imagers in India. One way women respond to this uncertainty is that they go for scanning only at the end of the second trimester (instead of 16 to 18 weeks). Despite this, we are not certain that the sensitivity of sex determination is over 90 per cent for boys. Thus in the desperation for sons, some male foetuses would have likely been aborted inadvertently. Our doubts are based on errors highlighted in the media [Lancet 1983, Kakadkar 1997], literature [Booth et al 1997] and from dialogue with imaging experts. Therefore, the real rates of induced abortions for sex selection are likely to be higher than our estimate.

That female foeticide is occurring in many cities of India is well known [Miller 1985, Booth et al 1997, Kishwar 1995]. The following observations from urban/ clinic studies are consistent with our findings: (1) SRB increases with birth order; (2) families with only daughters are more likely to practice female foeticide. The latter is evident from our finding that the highest distortion of SRB is among families with no sons (Table 8). A significant outcome from our study is that certain rural families are unable to tolerate even the first child to be a female and therefore will abort it. Our finding contradicts Das Gupta and Visaria' s claim that women are unlikely to use SDT for the first pregnancy [Das Gupta and Visaria 1996]. Their reasoning is based on the fact that deliberate girl child neglect often spares the first girl. This extrapolation of human behaviour from female infanticide to female foeticide is fallacious. As a Lancet editorial argued, new technology will create new problems for the society [Lancet 1974]. The evidence from Delhi [Khanna 1997] as well as South Korea are also supportive of our observation [Park and Cho 1995, Leete 1996]. Our data indicates that the proportion of families aborting female foetuses in the first pregnancy has been increasing over the past five years.

The increased popularity of female foeticide reported by doctors in Rohtak district is consistent with the finding that over a period of two decades the SRB of children born in MCH. Rohtak has become pronouncedly masculine (SRB for the years 1993-95 is 1.25, N=12,166 births). Distorted SRB have been reported from other hospitals in this region [Booth et a.l 1994, Das Gupta and Visaria 1996]. A part of the increase may reflect discrimination against girls following foetal sex determination in place of birth. Male babies may be given the privilege of safer hospital deliveries while for females delivery at home in the village is considered adequate. The SRB of institutional deliveries in India, predominantly an urban sample, increased from 1.06 to 1.12 over the period 1949-58 to 1981-91 [National Commission for Women 1994]. Note that the latter estimate is based on 6 million live births.

The existence of relatively greater gender equality in harijan castes has been reported from south India [George et aI1994]. This is because the only economic asset harijans have is their labour so women are seen as productive members of the family. Therefore harijans had no excess postneonatal girl mortality, or longer interbirth interval after a girl, or more favourable SRB as compared to upper castes. This does not imply that harijans do not express sex preference. They do practice differential contraception like the upper castes. But their intensity of preference for boys is lower. The overall LCSR is 1.05 for harijansas against 1.59 for upper castes. Further for almost every birth order the LCSR is less distorted for harijans. Note that sex selective abortion can also raise the LCSR like differential contraception. As couples who have girls continue to abort female foetuses until they have the right number of boys at which point they cease childbearing. Our ethnographic information that female foeticide is much less among harijans is consistent with the demographic data presented.

This comprehensive enquiry provides incontrovertible evidence of the practice of female foeticide in a rural population. Both in medical anthropology and anthropological demography meticulous micro level studies with people's participation have become a standard research methodology. We have not captured female foeticide at an individual level, which is most unlikely given the criminality of the act, the collusion of medical professionals and cultural sensitivity. However women collectively accepted the widespread extent of the practice in their villages. Our field research which has an ethnographic component complements district level census data. In matters like son preference which' is intensifying, information from large surveys becomes outdated soon. Consequently village studies need to be routinely carried out to understand the trends and determinants of gender inequity in every district.

Our research has a major limitation. We have not explored the significant health hazards of repeated late mid trimester abortions for women. The villagers reported that abortions are usually done in unregistered village clinics [Chowdhry 1994]. Further, maternal depletion following abortions in an environment of extensive iron deficiency could have additional adverse consequences for women's health.

The Rohtak district overall sex ratio is 1.18 while for Haryana it is 1.16 as per the 1991 census. The sex ratio of surviving children for both Haryana and Rohtak is 1.14. Our villages are better off than the average Rohtak village as far as women's status is concerned based on the intimate knowledge of the second author of the district. Also our selection criterion identifies the more liberal villages. The emergence of women leaders in our villages is significant in that it has occurred in one of the most conservative regions of India where women have led very

secluded lives . We therefore believe that the sex ratio of surviving children in the district is likely to be at least as masculine as in the study villages. The sex ratio of surviving pre school children in a December 1997 survey of randomly selected households of rural Haryana (total population= 10,000) was found to be 1.18 [Kumar 1998]. Furthermore, sex ratios from Sample Registration Surveys and indirect estimates from 1981 & 1991 censuses; all are supportive of such elevated child sex ratios and sex ratios at birth for Haryana [Sudha and Rajan 1998, Mari Bhat 1998]. Thus these data along with our knowledge of the extensive spread of SDT clinics all over Haryana in the mid to late 1980s suggests that the findings from our study villages have relevance for the state.

We are not implying that the rates of female foeticide elsewhere in rural India are as high as in Haryana. There has been a tradition of fierce patriarchy in this region as in some other parts of north India [Dreze and Sen 1996]. Women have long suffered patriarchal practices as female infanticide, child marriage, seclusion, dowry, levirate and polygamy. Not surprisingly, Haryana state has the highest overall sex ratio, the highest sex ratio at birth, the highest excess female child mortality and the lowest divorce rate for women in the country [NFHS 1993. GOI 1997]. SDT clinics have been functioning in Haryana towns for about 15 years. Mobile SDT clinics have been visiting many Haryana villages for over seven years [Chowdhry 1994]. The dramatic drop in fertility in Haryana over the period 1971-91 has been associated with increased use of SDT. The total fertility rate in rural Haryana in 1971 was 7.15 children per woman; which was the highest in India then, dropped to 4.17 by 1991 [Krishnaji and James 1998]. In patriarchal cultures, son preference intensifies in the transition period when fertiliity is declining [Das Gupta and Visaria 1996].

We selected villages in this region as we wanted to highlight the imbalance that could take place in case the same intensity of sex selective abortion were to take place elsewhere in India. There is no reliable data for the incidence of female foeticide but the Central Committee on Sex Determination described it as an epidemic across the length and breadth of the country [National Commission for Women 1994]. A rough estimate of female foeticide and direct infanticide together obtained by indirect demographic techniques on census data is 1.2 million 'missing girls' in India during 1981-91 [DasGupta and Mari Bhal 1997]. If we attribute all the 'missing girls' to foeticide this would amount to less than 1 per cent of female births. But the first author acknowledged that most of the selective abortions occurred during the second half of the decade and predicted that "we should expect to see more of it ill 1991-2001" [Weiss 1996]. Therefore the 1 per cent figure should be cautiously interpreted as there had been an explosion of SDT clinics in a few places from the late 1980s and In most parts of the country by early to mid 1990s. The access for rural populations enhanced substantially after sophisticated ultrasound machines became widely available in India from

early 1990s. Historically, the east Asian experience suggests that it takes less than a decade of spread of clinics for a dramatic rise in SRB to occur. Yet another comparative study of the 1981 and 1991 Indian censuses with a different methodology revealed that there has been a marked shift towards excess masculinity of SRB in 1991 in northwest and in north India with the exception of rural areas of Bihar and UP [Sudha and Rajan 1998]. These authors attribute this shift to female foeticide. Further, our greatest concern is that female foeticide is becoming popular even in south India where status of women has been historically much better. As late as 1987 there were virtually no SDT clinics in the south as opposed to north and west India. But over the last two to five years in southern states of Tamil Nadu and Andhra Pradesh, clinics have started mushrooming in small towns and even in semi-urban areas. We are aware from 13 years of field work in Tamil Nadu that rural women are increasingly resorting to SDT in recent years. Though the present level of incidence may not result in a serious distortion of SRB at the state level, the trends observed in northwest India and elsewhere indicate that it is just a matter of time before the distortions become evident in population data, unless these states immediately take determined action to prevent emergence of more SDT clinics and the abuse of these tests.

Advances in medical technology for sexing foetuses have made SDT more convenient and less risky for Indian women over the last two decades. Initially chorionic villus biopsy and amniocentesis were the techniques used. Ultrasonography has become the most widely used method of sex determination from the early 1990s. Besides being non- invasive, it also require no laboratory set up. Following adoption of economic liberalisation policies by India in 1991, several multinational companies have entered the domestic ultrasound market. Some have even begun to manufacture the equipment in India. Increased competition has led to the appearance of lower priced portable models, flexible credit and dependable service for the customer. Doctors motivated in part by multinational marketing muscle and considerable financial gains are increasingly investing in ultrasound scanners. In South Korea and China, domestic production of ultrasound machines facilitated increased utilisation of SDT [Cho and Hong 1995].

The general lack of gender sensitivity of Indian doctors and other professionals contributed to the popularisation of SDT. Just as in China, the first use of SDT in India was in a Government. institution. These researchers advocated the use of amniocentesis for sexing foetuses and claimed that in the foreseeable future sex selective abortions will not result in increasing the number of males [Verma et al 1975]. There are doctors who wanted the government to promote STD to reduce population growth [Lancet 1983]. Many gynaecologists see female foeticide as a medical solution to son preference and find nothing unethical in it [Lancet 1983].

Some economists argued that SDT would result in better status of women based on 'supply and demand' logic. Ignoring that cultural practices as son preference are not predictable by economic principles [Arora 1996]. For over two decades, medical abortions (MTP) were promoted by the Indian government to reduce fertility. Also traditional methods of abortion, though unsafe are still used to space and limit family size in rural India. Like traditional Chinese and Japanese societies, rural Indians have beliefs and methods which supposedly determine the sex of the foetus [Kakar 1980, Khanna 1997]. There is no evidence to suggest that these are sensitive enough to distort sex ratios. But they are accepted on 'faith' and too often abortion follows when the prediction is female. Given all this, the widespread acceptance of modern methods of sex determination and selective abortion of female foetuses in parts of India should not have been a surprise.

Some professionals hope that the national law (1994) against SDT will prevent female foeticide. The experience of Maharashtra state law (1988)does not give much ground for optimism. Before the legislation in Bombay city alone the number of STD clinics went up from 10 to 248 (during 1982-87). After the legislation the practice just went underground. Over the last 10 years not even one doctor has been penalised for breaking the law [Kakodkar 1997]. Some women activists argue that lobbying for gender just laws is not worthwhile as the state would not implement them [Kishwar 1995. Menon 1993]. This cynicism is not warranted as the state itself has an obligation to set desirable ethical standards. The profound inaction of Indian Medical Association, Medical Council of India (MCI) on SDT by doctors for 20 years despite representations is proof of gross professional indifference to gender equity [Lancet 1983, Kokodkar 1997, Mazumdar 1992]. However, recently the National Human Rights Commission (NHRC) asked MCI to take cognisance of the law. Following which the MCI decided to amend the code of medical ethics in order to initiate disciplinary proceedings against errant doctors [National Human Rights Commission 1996].

Health workers did not have proper records of births and deaths as they seldom visited villages in Haryana though their salaries are six times higher than that of AWW. A similar finding on vital events was reported from another district. The FHW had no records of births in some villages and in most villages the FHW were not even familiar with the women in their villages though they have been working there for over three years.

The coverage of antenatal services is poor. Though Haryana is economically prosperous and rural people have access to health facilities about 70 per cent of deliveries are conducted at home by untrained workers [Das Gupta 1990, Jejeebhoy 1997]. Infant and child mortality is unacceptably high as compared to

the poor southern states. A reduction in this mortality will likely reduce the gender disparity in post-neonatal mortality rates. Unfortunately, the entire focus of the health system is on fertility reduction. Till last year this was based on an elaborate system of targets for government workers, money for acceptors and incentives for health staff and even coercion of women [Bose 1996, Kumar 1997]. This led to widespread falsification of data and corruption [Bose 1996] and alienated the health system from people. The contraceptive burden is almost entirely on women. The government claims that there is a change in approach from the old method-specific contraceptive targets to client centred performance goals [Kumar 1997]. However, Rohtak FHW report that unofficial targets still remain though monetary incentives have been withdrawn.

Dreze and Sen (1996) have pointed out that the persistence of gender inequality and female deprivation are among India's most serious social failures and few other regions in the world have achieved so little in promoting gender justice. To raise the status of women it is imperative for the state to be aggressive about reducing existing gender disparities in education, economic opportunities, inheritance laws, property rights and political power. One step in the right direction is the Indian prime minister's 'girl child scheme' announced in August 1997, whereby two infant girls of every poor family will receive monetary incentives till they become adults [TOI 1997]. This will promote fertility reduction with gender equity. Further, public action has to challenge the many ways patriarchy demeans women. Men have to accept responsibility for contraception. Doctor and professional medical organisations by far have been indifferent to such gender concerns. Ethical medical practice is imperative for enforcement of the 1994 law against prenatal sexing of foetuses [Kakodkar 1997, Dickens 1986]. Medical education has to inculcate gender sensitivity in students. The focus of the health department has to change from forcing contraception on women to enhancing women's health and reducing the gender disparities at birth and in child survival. Otherwise the incidence of female foeticide will increase. Women's health will be the first' casualty. The acceleration of the increasing SRB will lead to disastrous social consequences for the well being of our women and our society.

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