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**Sex Selection:
Pervasiveness and Preparedness in Nepal**

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SEX SELECTION: PERVASIVENESS AND PREPAREDNESS IN NEPAL

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(i) ABBREVIATIONS

CAC	Comprehensive abortion care
CORT	Centre for Operation Research and Training
CREHPA	Centre for Research on Environment Health and Population Activities
DHS	Demographic and Health Survey
FGD	Focus group discussion
ICPD	International Conference on Population and Development
MoHP	Ministry of Health and Population
MSD	Modified segment design
NRs	Nepalese Rupees
PSU	Primary sampling unit
SLC	School Leaving Certificate
SRB	Sex ratio at birth
SRB1	Sex ratio for the population below 1 year of age
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
VDC	Village development committee

(ii) ABSTRACT

In Nepal, as in many Asian countries, son preference is very strong, due to the country's longstanding patriarchal social structure. According to the 2001 census, sex ratios (computed as the number of males per 100 females) for those younger than 1 year of age were over 106 in seven districts in the Tarai plains and one hill district. This study subsequently aimed to identify the incidences, causes and determinants of pre-natal sex selection in four of these eight districts. Three of the four districts (Dhanusha, Parsa, Kapilbastu) lie in the Tarai belt bordering India, while the fourth district (Gorkha) lies in the central hills. In addition, the study examined the situation in three border routes connecting Nepal with major towns in India, and in Kathmandu Metropolitan City, to assess the availability and accessibility of pre-natal sex-selection technologies in these areas.

A combination of qualitative and quantitative research methodologies was used in the study. Semi-structured interviews were held with health providers and other key informants, and focus-group discussions were held with husbands, mothers-in-law and married women. The locations of clinics offering pre-natal sex-selection services were mapped, and in-depth interviews were carried out with women who had undergone pre-natal sex selection. The survey of 2,644 married women age 15-49 was based on a multi-staged modified cluster sampling technique (see appendix). Data collection was carried out between July and early August 2007.

The evidence gathered by the study established that the majority of survey respondents (57 per cent) were aware of ultrasound technology, and knew where to obtain such tests. Women who were aware about ultrasound technology were about twice as likely to seek pre-natal sex determination as those who were unaware of such technology. In Nepal, ultrasound services are largely concentrated in Kathmandu city, but are also quite accessible in the urban areas within the four study districts and their adjoining districts. Such services are also available in Indian border towns, even though pre-natal sex selection is illegal in India.

The qualitative research findings identified culturally defined folklore that glorifies sons and disfavours daughters. For the most part, daughters were said to be necessary only to perform household chores. Sons, on the other hand, were said to be prized for continuing the family lineage, for providing economic support and old-age security, and for performing their parents' last rites.

The study found that there are great pressures on young married women to give birth to a son. Those women who have given birth to two or more daughters consecutively are under particularly high pressure, often in the form of threats from their mothers-in-law and husbands. Such women have no choice but to become pregnant repeatedly until a son is born. Statistically, the practice of pre-natal sex determination and sex-selective abortion was found to be very low in the study population. Only 3 per cent (74 women) of the ever-pregnant, women who have been pregnant irrespective of the outcome of the pregnancy; women had ever sought pre-natal sex-determination tests; and only 14 per cent of the women who had ever had an induced abortion had done so after pre-natal sex determination. The study subsequently points to pre-natal sex selection currently being at a preliminary stage in Nepal, in contrast to India and China, where it is a widespread phenomenon.

However, it is well known that legal sanctions against sex selection have not stopped medical practitioners and ultrasound operators in Nepal from providing these services. As such, this study recommends implementing national policies and programmes that can contribute to promoting gender equity, diminish socio-cultural and religious practices that manifest gender discrimination, and protect the reproductive rights of every Nepalese woman. The study also suggests initiating advocacy activities to reform the existing discriminatory laws, and initiating a public dialogue on the ethics of sex selection.

1 INTRODUCTION

1.1 Context

Nepal has been seen as a country with a strong preference for sons ever since the World Fertility Surveys first documented the phenomenon in the 1980s (Cleland *et al.*, 1983). Although daughters are desired, sons are especially prized for several reasons: they continue the family name, are needed to perform funeral rituals, and are expected to support their parents in their old age. The religious, political, legal, social, cultural and economic importance given to males has resulted in gender inequality, particularly in terms of limited life options (relating to job, home, marriage and other opportunities) for women and girls. Married women are often forced to bear children until they produce the desired number of sons.

This son preference strongly influences contraceptive use and fertility levels in Nepal, and can also lead to pre-natal sex selection. The rapid assessment of sex ratios at birth for the population younger than 1 year (SRB1) in 1991 and 2001 consistently showed more male than female babies being born in a number of districts in the Southern Tarai plains (UNFPA and CREHPA, 2007). Women tend to have a relatively low status in these Tarai districts, which also border India.

Anecdotal information points to the existence of pre-natal sex selection in Nepal. The greatly increased access to abortion in Nepal, since its legalisation in 2002, and the subsequent rapid expansion of abortion services throughout the country, could be facilitating pre-natal sex-selection practices. In the absence of strong empirical evidence of pre-natal sex selection, however, it is difficult to call for action on its prevention.

UNFPA takes gender equality and women's empowerment as a core mandate towards fulfilling its commitments to the International Conference on Population and Development (ICPD) agenda, and for meeting the Millennium Development Goals related to women's health, maternal mortality, gender equality and developing a global partnership for development. In 2006, UNFPA took gender-based violence as a global priority. UNFPA's country offices have been key actors in supporting policy reform and programme interventions to reduce violence against women, with a culture-sensitive and human-rights-based approach. While the Asia region presents many forms of violence against girls and women, in-depth analysis in the region has indicated the rapid increase in sex-ratio imbalance in several countries, largely due to pre-natal sex selection.

1.2 Background

1.2.1 *Gender discrimination and violence*

Nepal's 2001 census recorded a total population of 23.2 million, with an annual growth rate of 2.25 per cent. The census found a sex ratio of 99.8 males per 100 females, a slight increase from the 99.5 level recorded in the 1991 census. For children age 5-9, the sex ratio had changed from 102.6 males per 100 females in 1991 to 102.7 males in 2001. If equal survival chances are assumed, then this ratio should be lower by age 12. However, the 2001 census found 106 boys to every 100 girls in the 10-14 years age group. The sex ratio remained the same (103) in 2001 for age groups 0-4 and 5-9, indicating both that more sons are being born, and that girls are dying at an inordinate rate later on. In the 2001 census, a comparison of sex ratios, by ecological zone, for the population below 1 year of age found a higher number of boys than girls in the Tarai (104.8) than in both the hills (103.9) and mountains (102.6). This could be due to greater discrimination against women and girls in the Tarai.

Gender-based violence is commonplace across Nepal. It takes many forms, some of which are perpetuated by patriarchal traditions and values, irrespective of caste, class, ethnicity, religion, social status, educational background or geographic location. Women are mostly confined to the domestic sphere. Men, on the other hand, are considered the main breadwinners, and their roles are defined largely in the public sphere, where they dominate decision-making (UNESCO, 2006). Despite it being illegal, child marriage is prevalent in some Tarai communities and in remote areas of the Far-Western Development Region.

1.2.2 *Abortion*

Until 2002, abortion was illegal in Nepal. However, research found that unsafe abortions carried out clandestinely were fairly widespread, and were contributing significantly to Nepal's high maternal mortality rates. The open border with India, coupled with the geographical accessibility to and socio-

cultural similarities of Tarai inhabitants with those of Northern India, meant that it was not uncommon for women in these areas to visit Indian border towns for health care, including abortions. Abortion was legalised in India in 1972, and can be legally carried out until the foetus is 20 weeks old.

Since pre-natal sex-determination tests became widely available in private clinics in the early 1980s, and millions of Indian couples have subsequently used testing methods such as ultrasonography, amniocentesis, and chorionic villus to identify the sex of their foetuses. Many women's groups have condemned these tests, as they have often led to the selective abortion of female foetuses (Kishwar, 1993).

In Nepal during the late 1990s, as public support for legalising abortion was growing, concerns about the potential for increased prevalence of sex-selective abortion were often raised. However, research-based evidence on sex selection was lacking for Nepal at the time. In 2000, the Center for Research on Environment, Health and Population Activities (CREHPA) carried out a study that involved interviewing 61 of Nepal's leading obstetricians and gynaecologists. According to these providers, more women in the Tarai than in the hill districts were opting for pre-natal sex determination and the termination of female foetuses (CREHPA, 2000).

Until 2002, Nepalese law did not allow abortion under any circumstance, threatening women who had an abortion with imprisonment. Since 2002, Nepal's abortion law has allowed termination until the 12th week of uterine gestation for any reason, or up to 18 weeks if pregnancy results from rape or incest. In addition, abortion is legal at any time on the advice of a medical practitioner, or if the physical or mental health or life of the pregnant women is at risk, or if the foetus is deformed or unlikely to live.

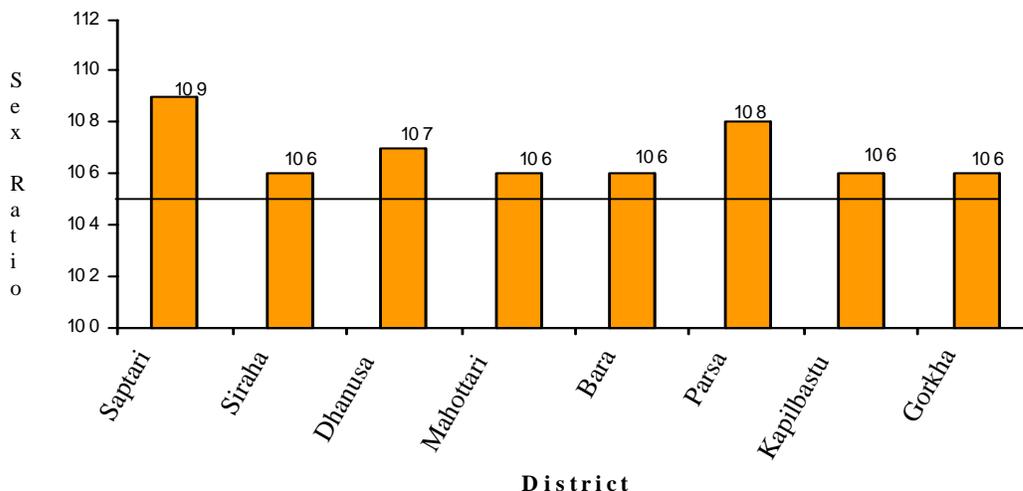
Considerable progress has been made in implementing the new abortion legislation. The number of government-approved comprehensive abortion care (CAC) centres has expanded rapidly to 70 of Nepal's 75 districts. As of July 2007, there were 79 centres managed by the government and 67 centres managed by non-governmental organizations (FHD/MoHP, 2007).

1.2.3 *Sex-selection processes*

Pre-natal sex determination and sex-selective abortion is illegal in Nepal. The offence of conducting (or facilitating) sex-determination tests alone is punishable with imprisonment of 3-6 months. Anyone found guilty of performing or facilitating a sex-selective abortion is punishable with one year's imprisonment (National Safe Abortion Service Policy, 2003). It is illegal for anybody providing ultrasound scans to reveal the sex of the foetus if they suspect that the client may abort the foetus as a result of that knowledge.

In preparation for UNFPA's regional meeting in New Delhi in February 2007, UNFPA Nepal commissioned a rapid assessment titled "Sex Ratios at Birth in Nepal with Special Reference to Sex-selective Abortion and Infanticide" (UNFPA, 2007). Analysis was based on the 1961, 1971 and 1981 censuses, as well as the Demographic Health Surveys of 1996 and 2001 (MoH, New ERA and ORC Macro, 2002 and 2006). The lack of reliable statistics from these and any other sources on pre-natal sex selection, and the absence of data on sex ratio at birth (SRB), meant that the sex ratio of the population below 1 year of age (SRB1) was used as a proxy indicator of pre-natal sex selection. According to data in the 2001 census, the rapid assessment found a higher SRB1 in the seven Tarai districts of Saptari, Siraha, Dhanusha, Mahottari, Bara, Parsa and Kapilbastu, and in the hill district of Gorkha (Figure 1). In view of the prevalent socio-cultural practices and the low status of women in these Tarai districts, it was postulated that pre-natal sex selection could well be a cause of the sex-ratio imbalance.

Figure 1: Districts where SRB1 was higher than expected in Nepal's 2001 census



Source: UNFPA, 2007

1.3 Purpose of the Study

Issues of pre-natal sex selection and resulting sex-ratio imbalances – particularly in the Asia-Pacific Region – have become a priority for UNFPA in terms of advocacy work and influencing policy agendas. Over the past few years, UNFPA's India and China offices have taken a lead in initiating programmes to address skewed sex ratios through advocacy and research. More recently, UNFPA in Vietnam, Pakistan, Cambodia and Nepal is in the process of supporting assessment studies and awareness-raising events to build evidence for future programme actions.

The present study aims to provide empirical data and in-depth analysis on the prevalence, causes and correlates of sex-ratio imbalances amongst population groups at specific sites in selected districts of Nepal. The research also takes an important cross-border perspective, in order to explore the demand for pre-natal sex selection and the availability of such services in both Nepal and India. The findings of the research are meant to influence and inform policymaking, and to reform and plan formulation and programme intervention by the Government of Nepal. The preliminary findings were presented at a UNFPA regional meeting held in Beijing in late August 2007.

2 METHODOLOGY

The study employed a range of research tools, carrying out investigations on both sides of Nepal's border with India, as well as in the Kathmandu Metropolitan City. Three routes leading from Nepal to the nearest Indian town, which are heavily used by Nepalese travellers for cross-border trade and transit, were selected for a rapid-assessment study. The Indian side of the study was carried out by the Center for Operations Research and Training (CORT), a research organisation based in Vadodra, Gujarat (India).

2.1 The Study Sites

In Nepal, the study was carried out in four of the eight districts that the 2001 census reported as having higher sex ratios for the population aged below 1 year (106 and over). Three of these districts (Dhanusha, Parsa and Kapilbastu) lie in the Southern Tarai plains, bordering the Indian states of Bihar and Uttar Pradesh. The fourth district, Gorkha, is a hilly district that lies in the Western Development Region of Nepal, about 145 km west of Kathmandu (Figure 2).

A statistically representative sample of women respondents was selected from these four districts in such a way as to ensure that a majority of respondents were from caste, ethnic and religious groups who exhibited a high SRB1 in the 2001 census (see Appendix 1). Thus, the predominant caste, ethnic and religious groups represented in the sample districts were Yadavs in Dhanusha and Kapilbastu; Muslims in Kapilbastu; Tharus and Tarai Dalits in Parsa; and hill Brahmins, Chhetris and Magars in Gorkha.

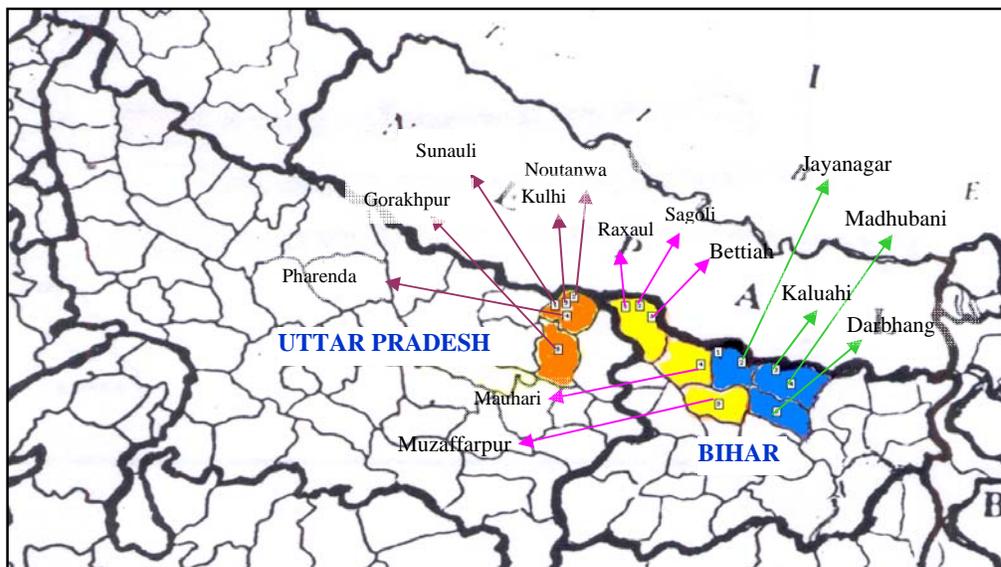
Apart from these four districts, a rapid assessment was carried out in the city of Kathmandu, due to its high concentration of facilities offering either ultrasound or abortion services.

Figure 2: Study Sites in Nepal



In India, the researchers first identified the major transit routes that connect Nepal and India, then selected the three routes that linked the three Tarai districts to the major border towns in India. The following three routes were thus selected for the cross-border study: the highways connecting Jaynagar-Darbhanga (Bihar), Raxaul-Patna (Bihar) and Sunauli-Gorakhpur (Uttar Pradesh). See Figure 3.

Figure 3: Study sites in India



2.2 Research Tools

A combination of quantitative and qualitative research tools were used to gather information from the sample districts of Nepal about son preference; knowledge, perceptions and practices regarding pre-natal sex determination and sex-selective abortion; and mapping of facilities that provide pre-natal sex-determination tests. The quantitative research component was a household survey of married women of reproductive age (age 15-49). The qualitative tools used for the study included: a) semi-structured interviews with key informants (health providers, ultrasound operators, community-based health volunteers, traditional healers and others); b) narrative focus-group discussions (FGDs) with married women, their husbands and their mothers-in-law; c) unstructured interviews with clients seeking abortion after pre-natal sex determination; and d) in-depth interviews with women who had ever utilized pre-natal sex selection or pre-natal sex determination.

For the three cross-border routes, the researchers used participatory rapid appraisal (PRA) tools to identify and map the places and practitioners that provide ultrasound and abortion services to Nepali clients. The information was “triangulated” by asking the same questions to other key informants, and through a “mystery client” approach (in which a trained observer posed as a client and reported on the service received) in identified clinics. Existing data from Nepal’s censuses, surveys, published research papers, service statistics and other relevant documents were also reviewed and analysed. The sampling procedure is described in detail in Appendix 1.

2.3 Data Management and Analysis

All of the primary data gathered from the study sites was compiled and analyzed in Kathmandu, while those from the Indian border cities were compiled and analyzed in Baroda by CORT. The completed questionnaires were entered into computers following manual editing and coding. After cleaning and consistency checks, the data set was transferred to the SPSS software programme. All focus-group-discussion transcripts were tape-recorded and transcribed in Nepali, along with the in-depth interviews. They were then compiled and analysed directly with the help of the field supervisors.

The individual questionnaire for women solicited information on their socio-economic background, household decision-making, access to basic amenities, pregnancy histories, son preference, knowledge about technologies for pre-natal sex determination and sex selection, and the practising of sex selection. On pregnancy history, information was gathered about the outcome of each pregnancy (whether the child was stillborn, miscarried, aborted or live-born, and whether it was a son or daughter) and the sex preference of the woman at the time of conception that resulted in a live birth. The women were also asked whether they had ever had an ultrasound scan while pregnant.

The information was then analyzed to determine, from amongst the sampled population, the SRB for each birth order (the first born, second born, etc.), son preference, and the use of induced abortion and ultrasound to determine the sex of the foetus. The aim here was to detect any patterns in the outcome of

each pregnancy. A separate section of the questionnaire focused on women whose first birth was a daughter. The aim here was to provide information on the extent of the pressure imposed on women to bear a son, measures taken to ensure that the second birth would be a son, and the physical and psychological affect of this pressure on women. A composite score, based on 14 variables, was also tabulated to determine women's participation in three types of decision-making - related to the household, their health care and mobility. Detailed information can be found in Appendix 1.

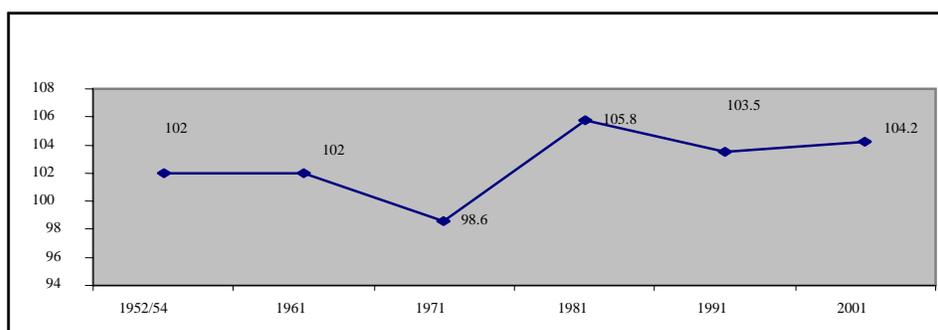
3 MAJOR FINDINGS

3.1 Sex Ratio at Birth: Analysis of Secondary Data

The sex ratio at birth (SRB) is a strong indicator of the targeted abortion of fetuses of an unwanted sex. However, Nepal's census data do not include SRB figures. Therefore, this study used the sex ratio for the population below 1 year of age (SRB1) as a proxy indicator. This variable is, however, slightly affected by sex differentials in infant mortality.

Nepal's 2001 census reported a sex ratio of 104.2 for children below 1 year of age. The trend in this ratio depicts no consistent pattern over the censuses carried out in Nepal since early 1950 (Figure 4), with ratios declining from 102 in 1961 to 98.6 in 1971, and then abruptly increasing to 105.8 to come close to the expected biological level of 106. The sex ratio by ecological zone has also not shown any uniform patterns. On the whole, the census-based sex ratios give no clear evidence of sex-selective abortion or infanticide.

Figure 4: Trends in SRB1 in Nepal, 1952/54-2001



Source: CBS Nepal, 1952/54, 1961, 1971, 1981, 1991, 2001

Analysis of the Demographic and Health Survey (DHS) 2006 data reveals no significant difference in SRB. The 1996, 2001 and 2006 DHSs report an almost constant SRB of 103-104 (Table 1). The current SRB level of 104 is below the biologically stable level of 106, indicating the absence of selective omission, abortion or infanticide (Retherford and Thapa, 2003).

Table 1: Trends in SRB: DHS 1996-2006

Source and year	Sex ratio at birth
DHS 1996	104
DHS 2001	103
DHS 2006	104

Source: DHS Nepal, 1996, 2001, 2006

3.2 Profile of Women Survey Respondents

Table 2 summarizes the socio-demographic and socio-economic characteristics of the 2,644 married women aged 15-49 years interviewed for this study. The median age of the women was around 30 in all four sample districts. Amongst these women, the Yadav (Tarai caste) women were in the majority in Dhanusha (57 per cent), while the Tharu (Tarai ethnic population) predominated in Parsa (58 per cent). Almost half of respondents in Kapilbastu were Muslims (49 per cent), while 65 per cent of respondents in Gorkha were hill Brahmins and Chhetris.

Over two-thirds of the women (68 per cent) were illiterate (which, for the purpose of this study means that they never attended school), with significantly higher levels of illiteracy in the three Tarai districts (73-80 per cent) than in the hill district of Gorkha (40 per cent). The large majority of the women were Hindus (88 per cent), though Muslim women made up almost half of the respondents in Kapilbastu (47 per cent).

In Kapilbastu, half of the women (50 per cent) were categorised as having a low level of autonomy. Over half of all sample households (56 per cent) fell into the "poor" economic category. Most

women in Gorkha (85 per cent) reported being engaged in non-household work such as farming and animal husbandry, or other economic activities such as service or business.

Table 2: Socio-demographic characteristics of married women: Household survey, 2007

	District %				Total %
	Dhanusha	Parsa	Kapilbastu	Gorkha	
Age					
15-24	27.9	28.4	30.6	26.7	28.4
25-34	38.1	42.8	38.9	35.9	39.0
35+	34.0	28.8	30.6	37.4	32.6
Median age	30.0	29.0	29.0	31.0	30.0
Caste/ethnicity					
Muslim	0.9	1.2	47.3	0.2	12.4
Yadav	56.5	0.7	13.3	-	17.4
Tharu	1.1	57.6	1.1	-	15.4
Dalit (Tarai)	11.7	35.6	10.5	-	14.7
Brahmin/Chhetri (hill)	1.1	-	1.8	63.7	16.4
Magar			0.2	19.5	4.8
Tarai general caste	24.1	4.9	19.3		12.0
Newar	0.6		0.3	7.7	2.5
Others*	4.0		6.3	7.7	4.5
Level of education					
Never attended school	78.1	79.7	72.6	40.2	67.8
Low education (Up to 5 grade)	5.2	11.6	17.2	19.2	13.3
Medium (6-10 grade)	14.0	7.5	8.3	35.3	16.1
High education (SLC and above)	2.6	1.2	2.0	5.4	2.8
Religion					
Hinduism	99.1	98.8	52.7	99.8	87.6
Islam	0.9	1.2	47.3	0.2	12.4
Women's activities					
Cultivator-cum-animal husbandry	10.2	11.8	32.2	54.0	26.9
Agriculture/manual labour	3.2	41.5	12.2	2.6	15.2
Other economic activities	4.2	9.1	5.4	28.4	11.7
Housework	82.4	37.6	50.2	15.0	46.2
Economic condition**					
Poor	47.7	67.3	49.0	59.3	55.8
Medium	34.3	17.2	41.5	32.3	31.3
Rich	18.0	15.5	9.5	8.3	12.8
Women's autonomy					
High	30.4	22.1	7.8	30.8	22.7
Medium	45.4	56.0	41.9	46.3	47.5
Low	24.2	21.9	50.3	22.9	29.8
Location					
Rural	70.8	69.6	71.8	71.5	70.9
Urban	29.2	30.4	28.2	28.5	29.1
Total	100.0	100.0	100.0	100.0	100.0
Number	648	680	664	652	2644

Tarai Brahmins, hill Dalits, Gurung, Bhujel and Kumal

*** This information refers to households*

3.3 Perceived value of daughters

In an effort to understand the extent to which daughters are valued in families in the four study districts, all of the surveyed married women were asked the following question:

In your opinion, is it necessary to have a daughter in the family, and what are the advantages of having a daughter in a family?

Almost all respondents (93 per cent) believed that having a daughter was necessary for helping with household chores (Table 3). Only a quarter of respondents considered daughters to be a family symbol of prestige and power (25 per cent) or a source of old-age security (24 per cent). Few women (13 per cent)

valued daughters for providing financial support. Women in Gorkha and Tharu women in the Tarai tended to value daughters more than did the other groups.

Table 3: Views on the value of daughters in the family: Household survey, 2007

	Percentage
1. Is it necessary to have a daughter in the family?	
Yes	93.1
No	6.9
Total	100.0
Number	2504
2. What are the advantages of having a daughter in a family?	
Help with household chores	90.5
Prestige and power	25.0
Old-age security	24.1
Financial support	13.3
Essential during festivities	8.3
Need to continue family lineage	6.0
Understand mother's pain	4.7
Other*	3.9
Number	2332

**Other advantages: home becomes a more pleasant place; a woman becomes pure after giving birth to a daughter; and carries out funeral rites.*

Totals may exceed 100 per cent due to multiple responses.

The extent to which daughters are valued in the family was further explored in the narrative focus-group discussions. These revealed the following perceived social, economic and religious advantages.

3.3.1 Social advantages

There was general consensus that daughters were needed to perform household chores and to help mothers collect firewood and fodder. The male (husband) participants in the discussions cited two main reasons for giving a low preference to daughters. The first referred to the existing patriarchal norms that expect daughters to go to live in their husband's home after marriage, with daughters therefore being seen as "someone else's property" by their fathers and families. The second reason was the belief that, upon marriage, a daughter ceases to have any responsibilities towards her parents, and that she instead goes to care for her husband's family.

Daughters do not look after us in our old age, as they have to go to their husband's place. Even if the daughter wants to look after us, her husband and his family members will not allow it.

-Husbands' group, Brahmin/Chhetri, Gorkha

Daughters become others' property once they grow up. They marry and go to their husband's house.

-Husbands' group, Muslim, Kapilbastu

*Even if we provide good food and care for our daughters, they will go to their husband's place, and cannot stay with us. But if we give birth to a son, then he will make our name shine. Everywhere they introduce themselves as **our** sons, grandsons, etc., but daughters and grand-daughters don't. Even if sons are langada [disabled], they keep our name.*

-Husbands' group, Yadav, Dhanusha

Mothers-in-law and married women in the group discussions likewise said that daughters become the property of others when they go to their husband's home after marriage. In rural Gorkha, the mothers-in-law said that women feel guilty for giving birth to daughters. In urban Parsa, the mother-in-law groups

expressed fears that grown-up daughters, if not married early, would elope with someone and bring shame to their family. Muslim women highlighted the low value given to daughters and women in society, saying that, within families, women were not even considered human beings, and that daughters do not enjoy any value or privileges.

Dowry is an important factor for the relative dislike of daughters. The dowry system is entrenched in all the Tarai communities where the group discussions were held, and was highlighted as the major reason for couples to resort to sex-selective abortions. According to the discussions, families with many daughters have to pay huge amounts of money as dowry. This system is not limited to the Tarai communities, but is also prevalent in hill communities, the only difference being whether payment takes place in cash or in kind. In the Tarai, payment is made in both cash and kind, while in hill communities, household items and ornaments are given to their daughters as *daijo* (household items and ornaments).

A male participant in the Dalit group discussion recalled having to face extreme hardship when the bridegroom's family demanded Nepali rupees (NRs) 20,000 (US\$ 300) as dowry.

It was very difficult for us to marry our daughter off because they asked for 20,000 rupees. This amount corresponds to my lifetime's earnings. I had no other choice but to borrow the money from a mukhiya [money lender].

-Husbands' group, Dalits, Birgunj

Although the dowry system is not practiced among the hill communities, the burden on families to marry off their daughters is often high. A daughter's parents are expected to give *daijo* to her at the time of marriage, and the type of items depends on a family's status. In Gorkha, the participants in the husbands' group discussion said that their main worry regarding their daughters was that they would need to try to marry them off to "good" (meaning rich) families, but that once they had done so their daughters would forget them. "That's why we prefer sons," said one participant. Although every couple expressed the desire to have at least one daughter, if given the choice almost all would opt for a son.

The women's group in Gorkha, on the other hand, valued daughters not only for their contribution to household work, but also for their ability to give birth. In the household survey, 20 per cent of the Gorkha women - as against less than 4 per cent in the three Tarai districts - gave this biological factor as an advantage of having a daughter.

We need daughters, as they help us in household chores and also help to collect firewood and fodder. Daughters are also valued because it is only women who can give birth.

-Women's group, Brahmin/Chhetri, Gorkha

3.3.3 Economic advantages

Daughters are not considered to have any economic benefit in most of Nepali society. Socio-cultural traditions expect daughters to live in their husband's house, and to look after their husband's family. Parents do not expect daughters to provide them with economic support once they are married.

3.3.3 Religious advantages

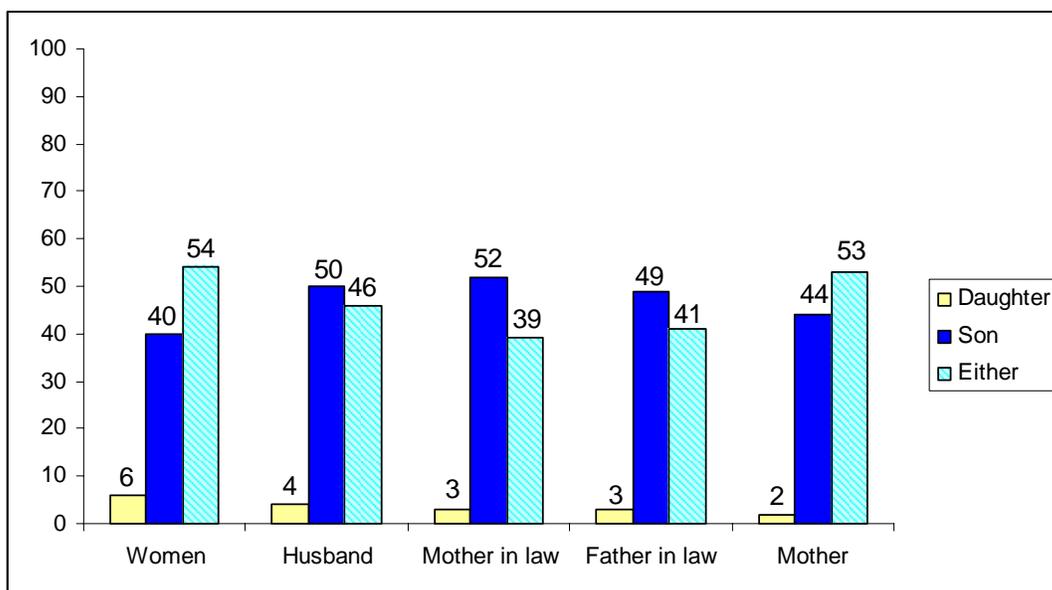
In Hindu families, the birth of a daughter is considered to mark the arrival into a house of Laxmi, the goddess of wealth. Traditional Nepali Hindus also believe that daughters are needed to be offered as *kanya daan* (the offering of a young daughter for marriage) in order to help their parents achieve *punya* (salvation from sins after death).

Seven months into my marriage, I conceived for the first time. My mother-in-law told me that it would be a blessing if my first child was a daughter, as there was only one daughter in the family. As wished by my mother-in-law, I gave birth to a daughter on the day of Laxmi Pooja [a Hindu festival]. The family members were very happy, and regarded my daughter as an incarnation of the goddess Laxmi. When I became pregnant for the second time, I hoped for a son, but had a second daughter. However, all the family members were happy, and regarded my second daughter as the goddess Saraswati [the goddess of education]. But I was not happy, as I wanted a son.

-Woman, Kathmandu

Preference for a daughter from the first pregnancy was very low in all four districts, including among all the Tarai and hill caste, ethnic and religious groups (Figure 5). Only a few married women (6 per cent) interviewed said they had preferred to have a daughter at the time of their first pregnancy. There is a high preference for sons among mothers-in-law (52 per cent), husbands (50 per cent) and fathers-in-law (49 Per cent). More women from the Yadav (51 per cent), Dalit (47 per cent) and Tarai general castes (42 per cent) preferred to have a son during their first pregnancy, compared to women from the hill communities (hill Brahmin/Chhetri and Magars, 28 per cent each). Likewise, more rural than urban women and more uneducated than educated women hoped for a son as their first child.

Figure 5: Preferred sex composition for the first pregnancy: Household survey, 2007



An analysis of the survey responses showed that the women's characteristics of ethnicity/caste/community, education, residence and awareness of sex-determination technology had significant effects on son preference (see Table A in Appendix 2).

Although having at least one daughter in the family was said to be welcomed, most families said that they did not celebrate the birth of a daughter. On one occasion during the study, the research team was present at the celebration of the birth of a son to a Baniya family (a Tarai general caste) in Kapilbastu. The house was bedecked with colourful decorations, and loudspeakers were playing loud, joyful music. Reportedly, if a daughter had been born, the neighbours would have only heard about the event months later, and there would have been no such celebration.

Levels of frustration or unhappiness within a family increase when a daughter is born to a family that already has a daughter. All participants in the group discussions were asked why society does not rejoice when a daughter is born. Most pointed towards traditional beliefs about the benefits of having a son and grandson, the economic reasons such as dowry, and the fact that daughters become someone else's "property". All of the married women saw dowry as the main reason for not wanting daughters.

We feel happy to also have daughters, and don't discriminate against them; but we don't celebrate when a daughter is born. There is no specific reason why people prefer sons. This may be due to cultural beliefs, where even mothers feel good after giving birth to a son. It may be because of our rituals and religious beliefs that we need to have at least one son in our families.

-Mother-in-law, Brahmin/Chhetri, Gorkha

My whole family was very happy when my first daughter was born, since they believed that having a daughter as the first child brings wealth and good luck. We hoped for a son when I conceived for the second time, but I gave birth to a daughter instead. However, my entire family was very supportive. When my third and fourth children were also daughters, I became very depressed and annoyed with myself for not being able to give birth to a son. My husband and family convinced me by saying that it was not my fault but their bad luck not to get a son. I asked a saint for blessings, and committed to make an offering to God if I was granted a son the next time.

-Urban Tharu woman, Parsa

3.4 Perceived value of sons

The high value that Nepalese society places on sons is deeply entrenched in socio-cultural, economic and religious practices. Men hold most of the rights, responsibilities and priorities, while women's social, economic, cultural and political status is inferior to that of men.

A large majority of the surveyed women cited the socio-economic and religious advantages of having a son in the family (Table 4). These included old-age security (79 per cent), financially supporting the family (67 per cent), continuing the family lineage (60 per cent) and performing funeral rituals (59 per cent). Women in Kapilbastu assigned a particularly high value to the financial support provided by sons (92 per cent) and to old-age security (84 per cent). In addition, most Parsa women believed that sons are important for performing the funeral rites (83 per cent) and continuing the family lineage (75 per cent). Half the women interviewed in Parsa also believed that having a son is a source of prestige and power. In terms of ethnicity, the survey showed that Muslims tend to attach the least importance to sons for performing funeral rites (19 per cent).

Table 4: Son preference in the family and reasons, as mentioned by women: Household survey, 2007

	Percentage
1. Is it necessary to have a son in a family?	
Yes	98.8
No	1.2
Total	100.0
Number	2,504
2. What are the advantages of having a son in a family?	%
Old-age security	79.5
Financial support	67.0
Family lineage	60.1
Last rites	59.1
Inheritance of property	23.6
Prestige and power	21.5
Other religious advantages	11.2
Number	2,474

Totals may exceed 100 per cent due to multiple responses

3.4.1 Social advantages

The discussion groups' views on the social advantages of having a son were similar across the surveyed communities. The main reasons given were old-age security, respect enjoyed by the family, and continuing the family legacy. A family without a son was said to be subjected to defamation and insults. Married women who are unable to bear a son face the most severe hardship and psycho-social trauma. Because of the great value placed on having a son, women who do not produce a son are said to be *niputra* (sonless), a *banjho bote* (tree without fruit) or *nirbansha* (no family lineage), even if they have daughters. Women who have many sons are called *jhyammiyeko rukh* (trees with numerous fruits).

People call woman who don't have sons niputra. Besides that, we have to face our neighbours' insults.

-Husbands' group, Yadav, Dhanusha

People call us kulangarni and alchini [ill fortune] because we don't have a son.

-Women's group, Brahmin/Chhetri, Gorkha

When my first daughter was born, all of the family members were happy. But after a second daughter was born, my in-laws began to nag me. They used to make very sarcastic comments to me. Often I had to tolerate accusations from my husband and brother-in-law for being unable to have a son. My brother-in-law harassed me the most.

-Yadav woman, Dhanusha

3.4.2 Economic advantages

Nepalese society expects sons to be the future breadwinners for their families. In Tarai communities, such as in Dhanusha and Kapilbastu, sons are also considered as the means by which to attain dowry. The higher a son's level of education and employment status, the more dowry that can be demanded. All of those who took part in the group discussions agreed on the roles and responsibilities of sons towards their parents, especially when parents grow old. The dowry system means that the birth of a son is celebrated, as the family then has "*dubai hath ma laddu*" (sweets in both hands), since sons fetch dowry. The recent trend, especially in the Tarai and hill districts, has also been to send grown-up sons to foreign countries for employment. Families with sons working abroad enjoy a higher social status in their villages.

Sons go abroad to work and bring money. Most of my friends went to Qatar to earn money. I am also trying to migrate to earn money, because I am the son and my family's breadwinner. I have to look after my family.

-Husband, Yadav, Dhanusha

3.4.3 Religious advantages

In Nepalese society, the most important role of a son is at the time of his parent's death, at which time sons, and only sons, are expected to perform the funeral rites. From a religious point of view, some view sons as the means by which they can reach heaven after death. The widespread traditional belief is that "*Chhora bhaye sworga ko dhoka khulchha*" (The door of heaven will be opened for us when we die if we have a son). This aspect was mentioned repeatedly by group-discussion participants in Gorkha (Table 5).

Table 5: Factors influencing son preference: Narrative focus-group discussions, 2007

Factors	Reasons for son preference			
	Gorkha (Brahmin/Chhetri)	Kapilbastu (Muslim)	Dhanusha (Yadav)	Parsa (Dalit and Tharu)
Socio-cultural	Continuation of family line, patriarchal society, inheritance of family property, respect in society	Old-age security, caretaker of parental property, respect in society, continuation of family line	Old-age security, caretaker of parental property, respect in society, continuation of family line	Old-age security, caretaker of parental property, respect in society, continuation of family line
Economic	Work in office, earn money for family, provide economic support	Earn money for family, bring dowry, can go abroad and earn money	Earn money for family, bring dowry	Earn money for family, can go abroad and earn money
Religious	Parents can go to heaven after death, only sons can perform funeral rituals	Only sons can perform funeral rituals	Only sons can perform funeral rituals	Only sons can perform funeral rituals

3.5 Measures Adopted Perceived as Influencing the Sex of the Foetus

In the survey, all of the 2,504 ever-pregnant women were asked whether they had ever taken any measures they perceived as increasing the likelihood that their next child would be a son. Only 7 per cent of these women said they had taken such measures (Table 6). However, a higher proportion of women (18 per cent) whose first child had been a daughter had taken such steps.

The most common method adopted was observing certain religious rites, with 89 per cent of the respondents whose first child was a daughter saying that they had done so. Many Nepalese – women themselves and other family members – offer prayers to their family deities, fast on a particular day each week, and perform other rituals in the hope of bringing about the birth of a son. Over a quarter of respondents (27 per cent) reported having sought blessings from spiritual healers, though less than half said that such actions are effective.

A third of the women who when were pregnant for the first time said they had consulted a doctor. Of the married women who had had their first son, 20 per cent said that they had undergone an ultrasound scan; overall, 11 per cent said they had had an ultrasound during any of their pregnancies.

Table 6: Measures adopted perceived as influencing the next birth, and perceived effectiveness: Household survey, 2007

	First child as daughter	First child as son	Pregnant for first time	Total
Measure adopted to bear a son				
Yes	17.6	6.9	6.7	12.3
No	82.4	93.1	93.3	87.7
Total	100.0	100.0	100.0	100.0
Number	1,263	1,196	45	2,504
Types of adopted measure				
Observed religious rites	88.7	78.3	66.7	85.7
Sought the blessings of spiritual healer	28.8	21.7	33.3	26.9
Consulted a doctor	10.8	13.3	33.3	11.7
Underwent an ultrasound	7.2	20.5	-	10.7
Took herbs or traditional medicines	9.5	9.6	-	9.4
Number	222	83	3	308
Perceived effectiveness				
Effective	45.9	-	-	45.9
Not effective	50.5	-	-	50.5
Result not known	3.6	-	-	3.6
Total	100.0	-	-	100.0
Number	222	-	-	222

Totals may exceed 100 per cent due to multiple responses

Measures adopted to increase the likelihood of having a son were more often reported among Tharu and Tarai Dalit women, uneducated women, women engaged in economic activities, women aware about pre-natal sex-determination technology, and women who had ever used contraception. These relationships were re-examined to identify variables correlated to the probability of adopting measures to ensure that the second birth would be a boy.

Table B of Appendix 2 shows that the variables of caste, awareness about sex-determination technology, place of residence and use of contraception were significant predictors of whether or not women would take measures they perceived as influencing their pregnancy in favour of having a son. For example, the probability of women from the Yadav, Tharu, Dalit, Muslim and other castes were 4.4, 10.7, 9.3, 3.6 and 4.3 times higher, respectively, than for the hill Brahmin and Chhetri women from Gorkha. Similarly, women aware of sex-determination technology were about twice as likely to take sex-selective measures as other women. Urban residence was also found to be a significant predictor for adopting measures to ensure that the second birth would be a boy.

3.6 Pressure to Bear a Son

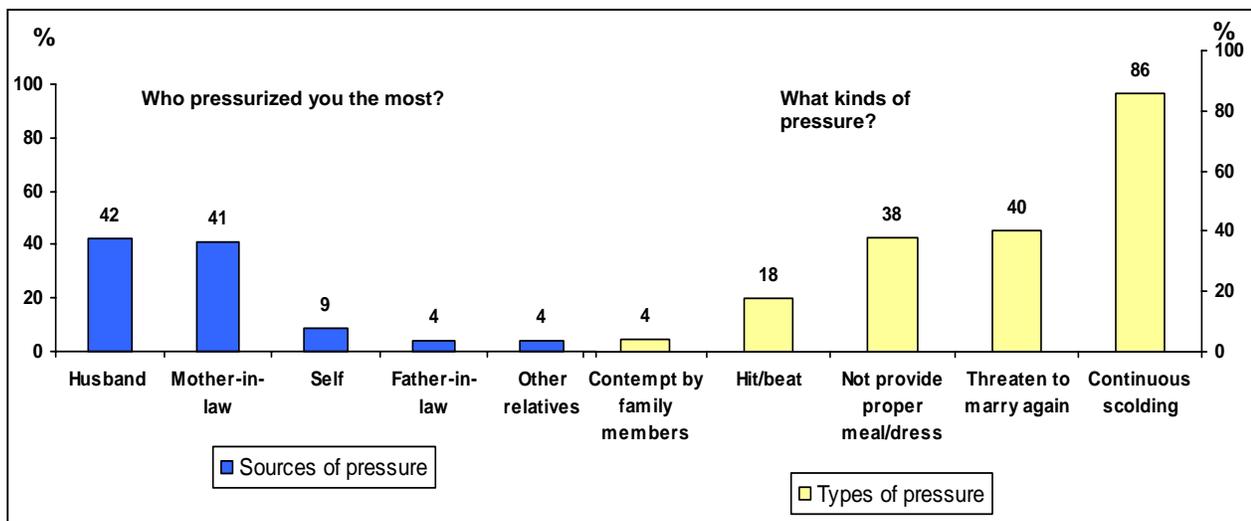
The extent of family pressures to bear a son was investigated amongst the 1,263 women (50.4 per cent of the surveyed women) whose first birth had been a daughter. As expected, the preference for having a son in their subsequent pregnancy was very high (81 per cent). Pressure to bear a son was reported by a quarter of these women. The pressure was much higher than average amongst the Parsa women (52 per cent). Husbands (42 per cent) and mothers-in-law (41 per cent) were the main family members to apply such pressure. About a tenth of the women also said that they felt personal pressure to bear a son. Very few women identified the fathers-in-law or other family members as sources of such pressure.

Women are threatened by their family members that a second wife will be brought in, and sometimes parents pressurize their sons to take another wife when the first one does not bear a son.

-Mother-in-law, Dalit

The most common pressure came in the form of psychological or mental abuse, such as scolding and other cruelty (86 per cent). Other reported types of pressure were the husband's threats to take a second wife (40 per cent), and discriminatory treatment. Physical abuse, such as beating, was reported by a considerable percentage of Dhanusha women (37 per cent), and by some of the women in the other two Tarai districts (18-19 per cent) (Figure 6). Very few women from Gorkha reported suffering physical violence due to not bearing a son (5 per cent). About one out of four women reported that the physical and mental torture had led them to develop suicidal tendencies.

Figure 6: Source and types of pressure on women whose first birth was a daughter: Household survey, 2007



The married women in the focus-group discussions gave their views about the frequency and types of pressure they were subjected to in order to bear a son. As in the quantitative survey, they pointed to the mothers-in-law and husbands as the two persons most likely to pressurize them (Table 7). In addition to the threat to bring a second wife, threats by mothers-in-law to send women back to their parental homes were also mentioned. Pressure from husbands ranged from discriminatory behaviour, less care and attention, verbal and physical abuse, threat of ejection and beating while drunk.

Table 7: Extent and type of pressure exerted by family members on women to bear a son: Narrative focus-group discussions, 2007

Source of pressure	Pressure level	Type of pressure
Mother-in-law	Strong	Threats to bring <i>sauta</i> (second wife) Threats to send back to parental home, or to leave home Providing sub-standard food and clothes
Father-in-law	Medium	Constant nagging about wanting to see a grandson Constant comparisons with women who have sons Threats to get another daughter-in-law
Husband	Strong	Discriminatory behaviour Less care and attention Threat to send back to parent's home

		Verbal and physical abuse Beating after becoming drunk Threat to get another wife
Self	Moderate	Self-disrespect Mental tension Worried about how they will be perceived by others
Neighbours	Medium	Sarcastic remarks Backbiting Blamed for not giving birth to a son Insults of being a <i>papi</i> (sinner)
Other relatives (sisters-in-law)	Medium	Ill treatment Verbal abuse Nagging for not bearing a son

Some Tarai communities believe that meeting a *niputar*, or sonless woman, early in the morning can bring bad luck for the whole day. Similarly, mothers-in-law in the Muslim community said that seeing the face of a sonless woman while going to a job would hinder the subsequent work. Such women can be taunted as *banjh* (sterile), even if they have a daughter. These social beliefs and misconceptions put tremendous pressure on women to bear a son. The husbands in the Yadav community talked about the ill treatment of women who do not bear sons, reporting that women are commonly not given nutritious food to eat after giving birth to a daughter. Such women are also forced to go to work quickly after delivery, in contrast to women who give birth to a son, who receive more care and are allowed to go back to work later. Importantly, it is not that the women are receiving more care because they have given birth to a son, but rather so that they can give more care to the son.

The nature of the discriminatory treatment received by women who bear daughters was explained by mothers-in-law in a discussion held in urban Kapilbastu. According to them, when a woman gives birth to a son she does not have to work for two months afterwards; but if the child is a daughter, she has to go back to work after just a few days.

The importance of having at least one son in the family was stressed in all focus-group discussions. The following quotes from these discussions show how husbands in the Tarai hold women at fault who only bear daughters.

After having four or five daughters, the husband will take another wife. This is not surprising to us. This practice has gone on for a long time.

-Husbands' group, Yadav, Dhanusha

Women themselves feel the pressure, since everyone values a son. They get scolded and people call them niputar when there is some quarrel, and people abuse them by saying they don't have a son.

-Husbands' group, urban Muslim, Kapilbastu

When I became pregnant for the first time, my whole family was very happy, but I couldn't give birth due to a miscarriage. Ten months later I became pregnant again, and gave birth to a daughter. Everyone expected a son from me when I became pregnant subsequently. My mother-in-law threatened that if I didn't give birth to a son this time, she would bring a second wife for my husband. I was scared and tense, and hoped to give birth to a son. But I gave birth to a daughter once again. My husband was happy and supportive, but my mother-in-law was unhappy, and didn't even bother to look at the face of the newborn.

-Woman, urban Kapilbastu

4 KNOWLEDGE AND PRACTICE OF PRE-NATAL SEX SELECTION

4.1 Traditional Practices and Beliefs

Traditional methods for pre-natal sex determination were explored through the experiences of the group-discussion participants. Several participants mentioned faith healers, who use certain (secret) herbs that they claim can selectively abort female foetuses; supposedly, these herbs have no effect on a male foetus. It is also believed that certain signs and symptoms experienced by women during pregnancy offered reliable clues to predict whether the foetus is male or female. Participants identified a number of traditional beliefs that are believed to show the sex of the foetus (Table 8). Some of these are in line with stereotypical gender features, with a male foetus being associated with a less beautiful mother, significant movement in the womb, as well as signs such as long-shaped fruit and rising smoke.

Table 8: Traditional ways of determining the sex of a foetus: Narrative focus-group discussions, 2007

Signs and symptoms of a girl	Signs and symptoms of a boy
Woman looks more beautiful and charming than before	Woman does not appear beautiful
Baby grows on left side of the womb	Baby grows on right side of the womb
Experiences similar symptoms as when she previously had a baby girl	Experiences similar symptoms as when she previously had a baby boy
Woman does not feel limb pain	Pain in the right limb throughout the pregnancy
Dreams about round-shaped fruits during pregnancy	Dreams about long or slender-shaped fruits during pregnancy
Less feelings of nausea/vomiting	Frequent severe feelings of nausea/vomiting
Smoke spreads around when <i>diya</i> (an oil lamp) is lit	Smoke remains straight, does not spread when <i>diya</i> is lit
Little foetal movement	Significant foetal movement
Certain herbal medicines result in miscarriage	Certain herbal medicine does not result in miscarriage

4.2 Availability and Awareness of Pre-Natal Sex-Determination Technology

4.2.1 Availability

Of the scientific techniques for determining the sex of a foetus, only ultrasound technology is available in Nepal. Most private health facilities (private hospitals and nursing homes) in Nepal have ultrasound facilities. In Kathmandu city alone, there are 24 private health facilities reportedly providing clandestine pre-natal sex-determination tests.

The cost of an ultrasound scan is NRs 500 or less; for (clandestine) pre-natal sex determination, the price varies between NRs 500 and 3000 (US\$ 8-46). The nearest place in India where Nepalese clients from the study districts can seek amniocentesis testing is Gorakhpur, a medium-sized town in Uttar Pradesh close to Nepal. There are several ultrasound clinics in Gorakhpur, as well as along the adjacent routes connecting Nepal with Indian border towns. The cost of the amniocentesis test in Gorakhpur is Indian rupees 5,000 (NRs 8,000), though Nepalese clients are often charged NRs 10,000 for the test. The advantage of this technology is that pre-natal sex determination can be performed early on in the pregnancy, at less than nine weeks.

Pre-natal sex-determination and abortion services are also available in the Indian border cities of Muzaffarpur and Darbhanga. Clients who visit Sunauli for sex-determination testing or sex-selective abortion are sent to Bettiah, since ultrasound scans are not available in Sunauli (see Figure 3).

4.2.2 Awareness

Many adults know that ultrasound technology (popularly known as "video X-ray") can identify the sex of a foetus. In the survey, over half the married women (57 per cent) were aware of the technology,

with hill Brahmin and Chhetri women (78 per cent) and Tharu women (79 per cent) being the most aware. Very few women mentioned traditional methods of foetal sex determination (4 per cent) and amniocentesis (less than 1 per cent). Friends and relatives (54 per cent) were said to be the main source of knowledge on this subject (Table 9).

Table 9: Knowledge about technology for pre-natal sex determination: Household survey, 2007

1. Have you heard of any method to determine the sex of a foetus?	Percentage
Yes	57.4
No	42.6
Total	100.0
Number	2,644
2. Do you know about such methods?	
Video X-ray/ultrasound	98.2
Amniocentesis	0.7
Traditional methods and beliefs	4.0
Number	1,518
3. How did you first learn about this method?	
Friends/relatives	54.8
Doctor	14.7
Husband	13.2
Neighbours	3.8
Read about it	2.8
Outreach health workers/health volunteers	2.4
In-laws	2.1
Parents	2.0
Others*	4.2
Total	100.0
Number	1,518

**Others = pharmacist, training, TV, radio, teacher*

Percentages total exceeds 100 per cent due to multiple responses

As expected, a positive association was found between the level of education and awareness about pre-natal sex-determination technology. A higher percentage of more-educated women (89 per cent), those with the School Leaving Certificate pass and above, were aware about sex-determination technology, as compared to only 49 per cent of women of those who had not attended formal school. Urban women were more also aware about this technology (70 per cent) than were rural women (52 per cent). Similarly, a large majority of women who were aware about the legalisation of abortion (85 per cent) were also aware of the technology. A significantly higher proportion of women who were involved in economic activities (64 per cent) were aware of these technologies than those were who were not involved in such activities (50 per cent), as were a higher proportion of women who were "rich" (81 per cent) compared to those who were "poor" (51 per cent) (see Table C in Appendix 2).

Further analysis found that variables such as caste/ethnicity, education, place of residence, knowledge about abortion law, involvement in economic activities, use of contraception, and household assets were significant predictors of whether women knew about sex-determination technologies. Tharu women were 1.9 times more likely to be aware about these tests than were Brahmin/Chhetri women; Yadav women were 66 per cent less likely and Muslim women 59 per cent less likely to be aware about

these tests than were Brahmin/Chhetri women. In addition, women who were aware about the legalisation of abortion were 3.6 times more likely to know about the tests than those who were unaware about the change in the law; and women from “medium” and “rich” households were 1.5 and 2.5 times, respectively, more likely to be aware about these technologies than were those from poor households (see Table D of Appendix 2 for detailed results).

Participants in the group discussions were asked to list modern methods for pre-natal sex determination that they had heard of. Surprisingly, all the husbands’ groups and women’s groups from both rural and urban areas in all four districts, as well as all of the mothers-in-law from the group discussions in Dhanusha and Gorkha, said they were familiar with ultrasound technology, and that they knew where to obtain such services (Table 10). Fewer were familiar with the amniocentesis test.

Table 10: Knowledge of pre-natal sex-determination technology: Narrative focus-group discussions, 2007

District	Mothers-in-law		Husbands		Women	
	Rural	Urban	Rural	Urban	Rural	Urban
Parsa	Few	All	All	All	All	All
Gorkha	All	All	All	All	All	All
Dhanusha	All	All	All	All	All	All
Kapilbastu	More than half	All	All	All	All	All

4.3 Practice of Pre-Natal Sex Determination

Approximately one out of ten of the married women interviewed (279 women, or 11 per cent) had ever sought an ultrasound (Table 11). Of them, more than a quarter (74 women) had undergone the scan for the purpose of pre-natal sex determination, whereas about three quarters (205) had sought out ultrasound service for general pre-natal care. In addition, three women (all from Parsa) had sought traditional methods of pre-natal sex determination. Most women in Dhanusha (73 per cent) and Parsa (74 per cent) had visited clinics in their home districts for carrying out pre-natal sex-determination tests. In contrast, two in three of the women in Kapilbastu (67 per cent) and Gorkha (64 per cent) had visited places outside their districts for ultrasound scans for the sole purpose of pre-natal sex determination.

The study team carried out in-depth interviews of 15 of the women who had resorted to or requested an abortion of a female foetus (see section 4.5). Three of them said they had diagnosed the sex of their foetuses by utilising a traditional method with help from a traditional birth attendant or practitioner, or by observing symptoms. Nine of the women had had an ultrasound performed in Nepal (Kathmandu, Butwal, Birgunj and Janakpur); two had visited Gorakhpur in India for amniocentesis; and one woman had visited an ultrasound clinic in Dharbanga, Bihar (India). The proportion of women going to India was therefore relatively low.

Table 11: Lifetime utilisation of ultrasound technology by ever-pregnant married women: Household survey, 2007

	Percentage
1. Ever undergone an ultrasound scan?	
Yes	11.1
No	88.9
Total	100.0
Number	2,504
2. Purpose of ultrasound among those who ever sought ultrasound	
For sex determination	26.5
For pre-natal health care	73.5

Total	100.0
Number	279
3. Method adopted for foetal sex determination	
Ultrasound scan	96.1
Traditional method	3.9
4. Place of foetal sex determination	
Private clinic in local district	54.5
Private clinic in other Nepalese district	22.1
Private clinic in India	14.3
Government service centre in India	5.2
Other	3.9
Number	77

4.4 Health-Care Providers' Perceptions on Demand for Pre-Natal Sex Determination

Altogether, 16 physicians (obstetricians and gynaecologists) and 103 paramedics (outreach health workers, technicians, chemists and others) were interviewed about their perspectives on sex determination, as well as the demand for sex-selective abortions. All of the health providers, except for 22 per cent of those in Dhanusha, said that women were generally curious to find out the sex of their fetuses. They said that the strong desire for a son, or pressure to have a son in the family (91 per cent), were the most important reasons for women's eagerness to enquire about the sex of the foetus. In addition, "sons are necessary to continue the family legacy" (23 per cent in Kathmandu) and "sons take care of family/provide economic support" (9 per cent) were also mentioned by the health-care providers. A higher percentage of these respondents believed that society does not desire daughters due to the fact that they will be a financial burden on parents at the time of marriage.

The large majority of the health-care providers in Parsa and Kapilbastu mentioned that it was women from affluent families who most sought pre-natal sex determination. The majority of those in Dhanusha (56 per cent) and Parsa (61 per cent) also believed that educated women were more anxious to find out the sex of their fetuses than were other women.

The reasons mentioned by the health-service providers as to why Nepalese women visited Indian health facilities in border towns were as follows: easy availability of health facilities, well-equipped clinics with trained and experienced doctors, and accessibility through road transport and railways. One health-care provider said:

The health facilities in Nepal are not that developed. In Nepal, in towns and villages with populations as large as 10,000-15,000, there is often no auxiliary nurse midwife. There are no hospitals, the roads are bad and specialist doctors are not available.

Costs were also perceived to be lower in India for the same services. In addition, they said that many Nepalese women, or someone they knew, had used the Indian facilities in the past and had recommended the same service to friends and relatives. Sometimes, clients were also referred by health-service providers.

4.5 Sex-Selective Abortion

Almost all of the Nepalese physicians interviewed (94 per cent) and over half of the paramedic informants (53 percent) reported that women visited their clinics, facility or medicine shop requesting pre-natal sex-determination tests. Almost all of the ultrasound technicians and gynaecologists from outside the Kathmandu Valley said that they did not reveal the sex of fetuses to their clients. They said that, although women and couples came to them asking to know the sex of their foetus, they refused to do so as it is illegal. However, some gynaecologists who also provide ultrasound service in their clinics, as well as some ultrasound technicians, stated that they have revealed the sex of a foetus when asked.

The majority of the providers (74 per cent) said that the practice of pre-natal sex-determination is increasing. Nearly all of them (95 per cent) indicated that most couples would resort to abortion if the foetus is a girl, particularly with regard to birth order. From these responses, it is apparent that women have multiple choices regarding providers for sex-selective abortion.

Among the women who had undergone ultrasound scans for pre-natal sex determination, 86 per cent came to know the sex of the foetus as a result. Over a third (37 per cent) were told that the foetus was a girl. On the other hand, all three women who had followed traditional methods of pre-natal sex determination were told that they were expecting a girl. Two of them did actually have female foetuses, whereas the other had a male foetus, the sex of which they came to know only after it was aborted. Of the 25 women who had been told that the foetus was a girl, only 10 women (40 per cent) resorted to sex-selective abortions.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Levels of the practice of pre-natal sex determination and sex-selective abortion are low in the study population. In the survey, only 3 per cent (74 women) of the ever-pregnant women had ever sought pre-natal sex-determination tests, and 14 per cent of the women who ever had an induced abortion had done so following pre-natal sex determination. Analysis of DHS data (DHS 1996-2001) on SRBs do not indicate the practice of sex-selective abortion in Nepal, as the SRB figures are within the biological stable levels of 106. Similarly, sex ratios for the population under one year of age (SRB1) from the population censuses do not give clear evidence of sex-selective abortion and infanticide for the country, except for seven Tarai and one hill district. It should be noted that SRB1 is not a reliable indicator for determining pre-natal sex selection, but calculation of SRBs from the population census is not possible due to the nature of data collected.

Although previous studies have characterized Nepal as a country with a strong son preference, the practice is gradually changing. The study showed that more than a half of the married women in the survey (54 per cent) had no preference for any sex from the first pregnancy, and only 40 per cent of the women desired a son. Ethnicity-wise comparison showed that, as compared to hill ethnic communities, women from the Tarai ethnic communities generally had higher desire for sons from their first pregnancy. Among the women who had a daughter as their first child, the large majority of them (76 per cent) had no subsequent pressure to bear a son. Nevertheless, the qualitative study revealed that daughters are less desired in a family, particularly due to the existing social practices of giving dowry during a daughter's marriage. The belief that a daughter cannot look after her parents once she is married was also perceived to be a main reason for lower preference for daughters in a family. On the other hand, sons are preferred because they are perceived to be the future sources of economic support, old-age security for parents, able to bring home dowry, and able to perform last rites.

The study found that legal sanctions against pre-natal sex determination and sex-selective abortion have not stopped medical practitioners and ultrasonologists in Nepal from providing such services. Because of easy geographical access to India, women from Nepal's Tarai region also have access to clandestine pre-natal sex determination at clinics in Indian border towns. The study showed that 57 per cent of the married women are aware of pre-natal sex-determination technologies, particularly ultrasound, and know where to obtain such tests. Ultrasound technicians in Nepal generally persuade women desiring sex-determination tests to have ultrasound scans done at 12 weeks of gestation, which is the upper gestation limit allowed by law for abortion in the country. Traditional methods of pre-natal sex determination also exist, but are not popular in the study districts. However, certain traditional practices, such as taking herbs that are believed to selectively cause abortion of female fetuses and the belief that the herbs do not harm the male fetuses, are potentially dangerous to women's health.

Overall, sex-selective abortion is not yet an issue of major concern in Nepal. However, in light of the legalization of abortion, easy availability of pre-natal sex-determination technologies and abortion clinics, as well as the religious and socio-economic value given to sons, the demand for sex-selective abortion could increase in the coming years. In addition, the declining fertility levels and the pressure on couples to balance the sex composition of their children may contribute to further demand for pre-natal sex selection.

5.2 Recommendations

The following recommendations have emerged from the study:

- Introduce stringent measures to prevent the misuse of ultrasound technology, and carry out periodic monitoring/surveillance of clinics that have such facilities. Periodic monitoring should also be carried out to prevent the misuse of second-trimester abortion skills provided by the Government to the medical practitioners;
- Impart gender training to all medical practitioners, and educate them about the long-term demographic and social consequences of sex-selective abortion;
- Target husbands, mothers-in-laws and community leaders for educational and advocacy campaigns about the long-term effect of sex-ratio imbalances, maternal/post-partum care for women, and the health risk of uterine prolapse to mothers who are compelled to resume their household chores without adequate post-partum rest;
- Educate the community and women about the illegality of sex determination tests for the sole purpose of selective abortion and the health risk associated with second trimester abortions;

- Prioritize educational and advocacy campaigns in Tarai districts where the practice of dowry is strong. Such campaigns should also focus on recent amendments of the discriminatory laws such as property rights to daughters and citizenship rights;
- Initiate programmes to benefit every girl child. Such programmes could be payment of higher maternity incentives to mothers who give birth to a girl, education scholarships and free vocational training for girls, and economic incentives for the parents of girls, such as livestock rearing;
- Future censuses should specifically record information on sex of the child at the time of birth, since SRB is a strong indicator of sex-ratio imbalance caused by pre-natal sex selection.
- Sex-selective abortion being a rare event and a highly sensitive topic, future surveys should have a larger sample size (representative of all major ethnic/caste groups), and should also include qualitative research components;
- Research is required to explore the factors motivating couples to seek abortion services in government-approved abortion (CAC) facilities, and the possible linkages between pre-natal sex determination and the demand for second-trimester abortion;
- Future abortion-related research studies, including DHS, should include questions on knowledge and practice of sex-selective abortion. The determinants and consequences of sex-selective abortion should be an integral part of all abortion research.

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APPENDICES

Appendix 1: Sampling methodology

1 Sampling design for the household survey

As data on the sex ratio at birth are not available for Nepal, the sample-size calculation was based on the sex ratio below 1 year of age, reported as 104.2 by the 2001 census. To obtain the extent of son preference and incidence of pre-natal sex selection in the four study districts (with 95 per cent confidence intervals and a precision level of ± 2.5), the desired sample size was calculated as 2,368 (say, 2,400) after adjusting for design effects and a refusal rate of 5 per cent. To reach the desired sample of 2,400 and keep intra-class correlation at an acceptable level of less than 3, it was decided to retain 25 households from each cluster having a maximum 200 households. On this basis, 96 clusters were sampled in the study (25x96 clusters = 2,400).

Since the population census of 2001 was not considered reliable for accurate household listing, as it was already six years old, the study employed the Modified Segment Design (MSD) methodology as used by UNICEF in Yemen for its Child Rearing and Practice Survey (Jongstra, no date). The MSD sampling methodology is most suited in situations where no accurate household listing is available. For sampling, it requires a desired number of clusters (96 clusters) to form the primary sampling units (PSU). The total number of clusters required for the four study districts was sampled following the procedure of probability proportional to size, the size being the number of households in a cluster. The urban sample was over-weighted from 15 per cent (national average) to 30 per cent by under-weighting the rural sample. Accordingly, out of the 96 clusters, 28 clusters (30 per cent) were assigned for urban areas, and the remaining 68 clusters (70 per cent) were assigned for the rural sample.

Since the district constituted the domain of analysis, each district was allocated an equal number of clusters (24 clusters). In each district, the allocation of clusters was based upon the population size of the village units (village development committees, or VDCs) and urban municipalities. For selecting the rural clusters, initially all village units with more than 50 per cent of the target ethnicities were listed separately, in alphabetical order, with their corresponding wards/cluster and household size. A cumulative frequency of households was prepared of all wards/clusters. Once this procedure was completed, the total number of households in the districts was divided by the allocated number of clusters separately (7 in urban and 17 in rural) to obtain the systematic selection interval for each of the rural and urban samples. Once the systematic selection interval was calculated, a random number of between one and the sampling interval was generated to obtain the first selection of the cluster. For the next cluster selection, a systematic sampling interval was added to the value of the select random number, and so on. This process was followed for all four surveyed districts.

In the second stage, each selected PSU (cluster) was subdivided into segments. Segments were defined as clusters of 25 households. A village unit had a maximum of 9 PSUs, while in a large urban ward more than 11 PSUs had to be formed. This stage of PSU sub-division into segments was done directly at the field level by the field supervisors. From the segments, one was chosen randomly, and all married women of reproductive age present in the households (25 households) of the sampled segment were interviewed. Before selection, an up-to-date list of households was prepared with the help of local knowledgeable persons from the sampled clusters. A high sex ratio below 1 years of age was used as the criteria for selecting communities in the sampled districts and clusters. For example, in rural areas of Dhanusha district, the clusters were formed in villages having 50 per cent or more of communities having higher SRB below 1 year of age (Yadav, Muslim, Kewat, hill Brahmin/Chhetri). Similarly, in Gorkha, clusters were formed in villages having higher concentrations of the hill Brahmin/Chhetri and Magars. In Parsa, Dalit (109) and Tharu (124) clusters were formed based on their population concentrations. In the case of Kapilbastu district, clusters were formed for villages having a higher concentration of Muslims (107), Yadavs (107) and Kurmis (109) population.

2 Sample performance

The use of the Modified Segment Design methodology allowed the study to cover 100 per cent of the households targeted (2400). Since the design was to interview all married women present in the sampled household, a total of 2,644 women were successfully interviewed. The number of focus-group discussions (24) was conducted as planned.

At the Kathmandu Maternity Hospital, a total of 208 clients had sought abortion services during the 11 days of observation. Of these, 133 (64 per cent) received the CAC service on the same day, while 48 (23 per cent) were requested to come another day; 27 others were denied the service because their gestation period had crossed the 12-week limit (beyond the legal allowance). Of these 27 clients, 4 clients had already found out the sex of their foetus from private clinics, had sought abortion at this maternity hospital, and were interviewed.

3 Women's decision-making

A composite score based on 14 variables related to women's participation in three types of decision-making (related to the household, their health care and mobility) was created, in order to measure women's autonomy. For each of the 14 variables, the women who reported that they took the final decision received a score of 2. Joint decisions with their husbands were scored 1, and where the decision was made by someone else a score of 0 was given. The scores ranged from 1 to 28. A score greater than 15 was considered a high level of autonomy, from 9 to 15 as medium, and below 9 as a low level of autonomy. The study also generated a composite score based on 19 household amenities, as a proxy indicator of wealth. These scores ranged from 1 to 17, with an average score of 7 (less

than 7 indicated "poor", while more than 12 indicated "rich"). A homogeneity analysis was carried out before examining cross-tabulations to better understand the relationships existing between variables. The variables with higher discrimination scores (higher than 0.2) are important ones to help differentiate cases from one another. The strongest variables are typically the ones that help to identify what each dimension represents. Accordingly, variables such as district, caste/ethnicity, education level, awareness about technology for foetal sex determination, and knowledge about abortion law were included for analysis since they scored higher than 0.2. Residence (rural/urban) was added purposively, although this variable did not emerge as a strong variable in the homogeneity analysis.

Bivariate and multivariate techniques were applied to identify the factors associated with the likelihood of women being aware about foetal-sex-determination technology. In the bivariate analysis, Chi-square tests were performed to measure the association within the variables. Logistic regression was used to identify adjusted associations with the probability of having son preference and knowledge about sex-determination technology among married women. Whilst carrying out the analysis, multicollinearity among the variables was assessed, and highly correlated variables were removed from the logistic model. For example, the two variables of age and number of surviving children were found to be highly correlated. Therefore, age was removed from the model.

Appendix 2: Supplementary tables

Table A: Desired sex of first child by background characteristics of sample women: Household Survey, 2007

Background characteristics	What did you desire from your first pregnancy? (%)					
	Daughter	Son	Any	Total	No.	Chi-Square
District						(94.5)***
Dhanusha	6.5	50.0	43.5	100.0	604	
Parsa	8.4	45.7	46.0	100.0	668	
Kapilbastu	4.7	36.8	58.5	100.0	619	
Gorkha	4.7	28.7	66.6	100.0	613	
Caste/ethnicity						(93.5)***
Muslim	3.8	36.6	59.6	100.0	317	
Yadav	7.1	50.8	42.1	100.0	425	
Tharu	6.3	43.9	49.9	100.0	399	
Dalit(Tarai)	8.7	47.4	43.9	100.0	367	
Brahmin/Chhetri (hill)	4.1	27.8	68.1	100.0	414	
Magar	5.1	28.0	66.9	100.0	118	
Tarai general caste	5.7	41.8	52.5	100.0	299	
Others*	8.5	34.5	57.0	100.0	165	
Religion						(7.0)*
Non-Hindu	3.8	36.6	59.6	100.0	317	
Hindu	6.4	40.9	52.6	100.0	2,187	
Place of residence						(25.2)***
Urban	6.4	32.8	60.8	100.0	732	
Rural	6.0	43.5	50.5	100.0	1,772	
Education level						(40.9)***
No formal schooling	5.7	44.3	49.9	100.0	1,724	
Low education (Up to fifth grade)	7.7	34.0	58.3	100.0	326	
Medium education (6-10 grades)	5.7	30.8	63.5	100.0	389	
High education (SLC and above)	10.8	24.6	64.6	100.0	65	
Awareness about sex-determination technology						(18.1)***
No	4.1	43.9	52.0	100.0	1,049	
Yes	7.6	37.9	54.6	100.0	1,455	
Knowledge about legalization of abortion						(9.2)*
No/don't know	5.7	41.6	52.8	100.0	2,089	
Yes	8.2	34.5	57.3	100.0	415	
Household assets						(9.9)*
Poor	5.9	42.7	51.4	100.0	1,291	
Medium	5.8	38.3	56.0	100.0	713	
Rich	8.1	34.5	57.4	100.0	296	
Women's autonomy						(11.9)*
Low autonomy	6.0	44.5	49.5	100.0	705	
Medium autonomy	5.4	39.7	55.0	100.0	1,212	
High autonomy	7.8	36.8	55.4	100.0	587	
Total	6.1	40.4	53.5	100.0	2,504	

* Significant at $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Ref= Reference Category

Table B: Estimated odds ratios of measures adopted to influence a pregnancy in favour of having a son at the second birth: Household Survey, 2007

Selected characteristics	Odds ratio
Caste/ethnicity	
Brahmin/Chhetri (hill) (Ref)	1.00
Yadav	4.39**
Tharu	10.68***
Dalit (Tarai)	9.33***
Magar	1.07
Muslim	3.6**
Others	4.33***
Education level	
No formal schooling (Ref)	1.00
Low education (up to Grade 5)	0.65
Medium(6-10 grades)	0.52
High education (SLC and above)	0.21
Place of residence	
Urban (Ref)	1.00
Rural	1.59*
Awareness about SDT technology	
No (Ref)	1.00
Yes	2.11***
Involved in economic activities	
No (Ref)	1.00
Yes	1.27
Ever used contraception	
No (Ref)	1.00
Yes	1.57*
Number of living children	
1-2 (Ref)	1.00
3-4	0.99
4-5	1.63
6 or more	1.35
Women autonomy	
Low autonomy (Ref)	1.00
Medium autonomy	1.51
High autonomy	1.48
-2 Log likelihood	990.97
Cox & Snell R square	0.135

* Significant at $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Ref= Reference Category

Table C: Married women's awareness about sex-determination technology: Household Survey, 2007

	% Awareness about SDT technology				Chi-square
	Yes	No	%	No.	
District					(359.6)***
Dhanusha	34.6	65.4	100.0	648	
Parsa	76.5	23.5	100.0	680	
Kapilbastu	44.0	56.0	100.0	664	
Gorkha	73.8	26.2	100.0	652	
Caste/ethnicity					(297.8)***
Brahmin/Chhetri (hill)	78.3	21.7	100.0	434	
Yadav	34.6	65.4	100.0	459	
Tharu	79.1	20.9	100.0	406	
Dalit (Tarai)	56.7	43.3	100.0	388	
Magar	65.6	34.4	100.0	128	
Muslim	41.6	58.4	100.0	329	
Others	51.2	48.8	100.0	500	
Religion					(38.0)***
Non-Hindu	41.6	58.4	100.0	329	
Hindu	59.6	40.4	100.0	2,315	
Education level					(200.0)***
No formal schooling	48.6	51.4	100.0	1,792	
Low education (up to Grade 5)	65.9	34.1	100.0	352	
Medium (grades 6-10)	81.7	18.3	100.0	427	
High education (SLC and above)	89.0	11.0	100.0	73	
Residence					(65.9)***
Urban	69.6	30.4	100.0	769	
Rural	52.4	47.6	100.0	1,875	
Knowledge about legalization of abortion					(166.4)***
No/don't know	51.8	48.2	100.0	2,202	
Yes	85.1	14.9	100.0	442	
Involved in economic activities					(55.6)***
No	49.6	50.4	100.0	1,221	
Yes	64.0	36.0	100.0	1,423	
Household assets					(89.8)***
Poor	50.9	49.1	100.0	1,340	
Medium	57.6	42.4	100.0	752	
Rich	80.5	19.5	100.0	308	
Ever used contraception					(75.8)***
No	48.3	51.7	100.0	1,086	
Yes	65.6	34.4	100.0	1,418	

Number of living children					
None	50.7	49.3	100.0	213	(40.0)***
1-2	63.4	36.6	100.0	937	
3-4	58.0	42.0	100.0	1,007	
4-5	51.1	48.9	100.0	237	
6 or more	44.0	56.0	100.0	250	
Women's autonomy					
Low autonomy	55.8	44.2	100.0	789	(1.6) ns
Medium autonomy	57.5	42.5	100.0	1,255	
High autonomy	59.2	40.8	100.0	600	
Total	57.4	42.6	100.0	2,644	

* Significant at $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Ref= Reference Category

Table D: Estimated odds ratios of awareness about sex-determination technology by selected characteristics: Household Survey, 2007

Selected characteristics	Odds ratio
Caste/ethnicity	
Brahmin/Chhetri (hill) (ref)	1.00
Yadav	0.34***
Tharu	1.91**
Dalit (Tarai)	0.84
Magar	0.71
Muslim	0.41***
Others	0.47***
Education level	
No formal schooling (ref)	1.00
Low education (up to Grade 5)	1.76***
Medium (6-10 grades)	2.69***
High education (SLC and above)	2.52*
Place of residence	
Urban (ref)	1.00
Rural	0.69**
Knowledge about legalisation of abortion	
No/don't know (ref)	1.00
Yes	3.62***
Involved in economic activities	
No (ref)	1.00
Yes	1.79***
Household assets	
Poor (ref)	1.00
Medium	1.45**
Rich	2.48***
Ever used contraception	
No (ref)	1.00
Yes	1.33*
Number of living children	
None (ref)	1.00
1-2	0.85
3-4	0.81
4-5	0.77
6 or more	0.63
-2 Log likelihood	2,564.9
Cox & Snell R square	0.22

Significant at $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Ref= Reference Category