

# Gender preferences and demand for preconception sex selection: a survey among pregnant women in Pakistan

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**BACKGROUND:** In its recent report 'Human Reproductive Technologies and the Law', the House of Commons' Select Committee on Science and Technology called for greater efforts to establish the potential demographic impact of sex selection across all sectors of UK society. Given the well-known preference for boys over girls among some communities, there is concern that a readily available service for social sex selection may upset the balance of the sexes. Of particular interest are the gender preferences and the demand for sex selection among Pakistanis. **METHODS:** We conducted a social survey on gender preferences and potential demand for preconception sex selection among 301 pregnant women in Karachi, Pakistan, using a self-report questionnaire consisting of 14 questions. **RESULTS:** About 41.5% wish to have a family with an equal number of boys and girls; 3.3% would like to have only boys, 1.0% only girls, 27.6% more boys than girls and 4.3% more girls than boys, and 22.3% stated that they do not care about the sex composition of their family. Whereas 6.3% could imagine employing cytometric sperm separation for social sex selection, 76.1% could not and 17.6% were undecided. About 27.2% felt that social sex selection ought to be legal, 48.8% thought it ought to be illegal and 23.9% were undecided. **CONCLUSIONS:** Although Pakistani women do show a statistically significant preference for boys over girls, the number of women willing to subject themselves to cytometric sperm separation appears to be too small to cause a severe imbalance of the sexes. However, further research among British citizens of Pakistani origin is needed to establish whether sex selection poses a serious threat to the sex ratio of UK communities.

*Key words:* preconception sex selection/sex ratio/social survey/public policy

## Introduction

The British Department of Health is currently reviewing the Human Fertilisation and Embryology Act 1990. One of the issues to be addressed is whether PGD and cytometric sperm separation should be made available for the purpose of social sex selection. Although the Human Fertilisation and Embryology Authority (HFEA) advised to ban sex selection for any but the most serious of medical reasons, the House of Commons' Select Committee on Science and Technology concluded that there is no adequate justification for prohibiting the use of sex selection for family balancing (HFEA, 2003; House of Commons, 2005).

In its report 'Human Reproductive Technologies and the Law', the Select Committee on Science and Technology urged the Department of Health to encourage further research into the moral, legal and social implications of sex selection for non-medical reasons: 'The issue requires greater analysis than has been afforded by the HFEA and we urge greater efforts to

establish the demographic impacts across all sectors of society' (House of Commons, 2005: 64). Although there is no evidence that allowing Britons to choose the sex of their children would result in a socially disruptive distortion of the natural sex ratio, there is concern that some communities within the UK, most notably British citizens of Indian and Pakistani origins, may have a decided preference for boys over girls. Permitting them to use sex selection could upset the balance of the sexes within these subpopulations and reinforce sexist attitudes. Thus, the report concluded that 'Further research is required to establish these impacts' (House of Commons, 2005: 62).

The Select Committee on Science and Technology did not specify the nature of research to be conducted. However, it is quite obvious that research into the possible demographic implications of sex selection requires two quite different approaches. First, social scientists should survey gender preferences and attitudes towards sex selection of Indian and Pakistani populations. Ideally, these social surveys should be conducted

among those who are living in their home country, those who have moved to Great Britain and those who have been born and raised in the UK. Second, demographic scientists should analyse actual reproductive behaviour by examining when couples stop having more children. By comparing the reproductive behaviour of couples with two boys, two girls and one boy and one girl, they can gain data on the most desired sex composition of their family and, consequently, either verify or falsify the gender preferences that have been stated. Again, if possible, research should focus on three different populations: on those who are living in their home country, those who have moved to Great Britain and those who have been born and raised in the UK.

To contribute to the suggested research, we conducted a social survey on gender preferences and possible demand for sex selection among pregnant women in Pakistan. Providing data on a Pakistani population is important for three reasons. First, Pakistan accounts for ~8% of the 100 million women who are 'missing' worldwide (Klasen and Wink, 2003; Allahbadia, 2002). The phrase 'missing women' has been coined by economist Amartya Sen to refer to the number of females whose lives have been cut short because of sex bias in relative care (Sen, 1992, 2003). Second, Pakistan's unusually high birth sex ratio of 108 points to a widespread use of ultrasound scans for the sole purpose of sex selective abortions (Miller, 2001). These selective abortions may have substantially contributed to the deficit of 6 million women that has been reported for Pakistan (Hudson and Den Boer, 2002, 2004a,b). Third, as already indicated, the Pakistani population constitutes the third largest ethnicity in the UK. Given that immigrants are very likely to uphold the cultural values of their native country, a decided preference for boys over girls could have a marked demographic impact on some communities within the UK. To our knowledge, this is the first study in the medical literature that examines the gender preferences and demand for sex selection among a population of Pakistan.

For a Pakistani community to upset the balance of the sexes, at least two conditions must be met: first, there must be a marked preference for children of a particular sex, and, second, there must be a considerable demand for a reproductive service for preconception sex selection. Both conditions need to be met simultaneously. For example, if there was a marked preference for children of a particular sex, but Pakistani couples were unwilling to use sex selection technology (because it was thought to be too intrusive, too expensive, outright immoral or simply against their religion), then a readily available service for sex selection would not have any demographic effect whatsoever. Likewise, if there was considerable interest in employing sex selection technology, but couples did not have a marked preference for children of a particular sex (because they wish to have an equal number of boys and girls), then, again, a readily available service for preconception sex selection would not alter the sex ratio in any way. Moreover, for preconception sex selection to distort the natural sex ratio, couples need to control their sexual activity and to engage in a reliable form of family planning. If most of their pregnancies were unplanned, the demographic effects would be considerably reduced. Thus, our questionnaire focused on gender preferences,

willingness to employ reproductive technology, moral attitudes towards sex selection and the degree of family planning.

## Methods and results

Our survey in Karachi, Pakistan, was conducted between 1 and 20 December 2004. Of 370 pregnant women who were approached, 301 completed the questionnaire. To account for differences in education and income, we chose five medical centres serving patients from different ethnic backgrounds and socioeconomic status. The medical centres in question were the Sindh Government Qatar Hospital, the Sher Shah Health Centre, the Sobhraj Maternity Hospital, the Civil Hospital and the 7th Day Adventist Hospital. The Sindh Government Qatar Hospital in Karachi is an institution for lower class patients from different parts of Pakistan. The Sher Shah Health Centre, which is run by the government, is also visited by the underprivileged class, mainly from people of the northern area of Pakistan who have moved to Karachi in search of employment. The Sobhraj Maternity Hospital is one of the oldest medical institutions in Karachi and, again, is visited by a multi-ethnic, underprivileged population from different parts of Pakistan. The same applies to the Civil Hospital, one of the oldest training hospitals in Karachi. By contrast, the 7th Day Adventist Hospital is a private institution that is almost exclusively visited by patients from the upper and the middle classes with a higher education. Information on recruitment of the sample is given in Table I.

Each woman received a self-report questionnaire consisting of 14 questions. Women who could not read the questionnaire by themselves were assisted by nurses. For statistical analysis, Software-System SPSS 11.0 was used. The first part of the survey collected information about the women's age, education and marital status (Table II). As the table summarizes, most of the pregnant women, generally married, were still young, between 18 and 25 years of age. A majority had only primary school or no formal education at all.

Most women (170, 56.5%) did not have a planned pregnancy, whereas 131 (43.5%) women reported that their pregnancy was planned. Only 41 (13.6%) women already knew the sex of their fetus and 260 (86.4%) were unaware of the sex of the baby. Of these 260 women, 127 (48.8%) wanted to know the sex of their unborn. Of the 260 women, 102 (39.2%) were hoping for a baby boy and 36 (13.8%) were hoping for a baby girl. The remaining 122 (47.0%) women, who already had given birth to a boy, reported that they had no preference for any particular sex. In contrast to these results, only 22 (25.9%) of 85 women having *no* experience as a mother wished for their first child being a boy, 17 women wished for a girl and all others (46) would leave this to their fate. A preference in having equal numbers of male and female children was also present: 125 women wanted an equal number of both genders. About 83 women wanted more boys than girls, and 13 women wished to have more girls than boys. It was interesting to see that 10 women wanted to have only male children and 3 to have only female (Tables III and IV,  $\chi^2 = 18.379$ ,  $df = 8$ ,  $P = 0.019$ , crosstable "gender preferences  $\times$  medical centres").

**Table I.** Recruitment of sample from five health care centres in Karachi, Pakistan

Health care institution	Number of patients (%)
Sher Shah Health Centre	46 (15.3)
Qatar Hospital	68 (22.6)
Sobhraj Maternity Hospital	62 (20.6)
Civil Hospital	67 (22.2)
7th Day Adventist Hospital	58 (19.3)
Total	301 (100.0)

**Table II.** Information on age, education and material status of the participants

Characteristic	Number of patients (%)
Age (years)	
<18	6 (2.0)
18–25	125 (41.5)
26–30	98 (32.6)
31–35	58 (19.3)
36–40	11 (3.7)
>40	3 (1.0)
Total	301 (100.0)
Education	
No schooling	99 (32.9)
Primary school	64 (21.3)
Secondary school	81 (26.9)
High School	29 (9.6)
University	28 (9.3)
Total	301 (100.0)
Marital status	
Single	6 (2.0)
Married or stable partnership	295 (98.0)
Total	301 (100.0)

**Table III.** Planning the pregnancy, knowledge of fetal sex and interest in sex determination of the participants

Characteristic	Number of patients (%)
Pregnancy	
Planned	131 (43.5)
Unplanned	170 (56.5)
Total	301 (100.0)
Knowledge of fetal sex	
Yes	41 (13.6)
No	260 (86.4)
Total	301 (100.0)
Interest in sex determination	
Yes	127 (48.8)
No	133 (51.2)
Total	260 (100.0)

After being informed about the procedure and costs of sex selection (Table V), only a small group of 19 (6.3%) women reported that they could imagine using sex selection through sperm sorting, 229 (76.1%) could not and the remaining 53 (17.6%) were undecided.

If sex selection was covered by their health insurance, 55 (18.3%) women said that they would be willing to use it, 174 (57.8%) were unwilling to use it and 72 (23.9%) were undecided.

If it was possible to select the sex of their children through medication, 65 (21.6%) would do so, 163 (54.1%) would not and 73 (24.3%) were undecided.

Asked whether social sex selection should be legal or illegal, 82 (27.2%) said it ought to be legal, 147 (48.8%) said it ought to be illegal and 72 (23.9%) were undecided.

**Discussion**

Our survey confirms that Pakistanis do indeed have a statistically significant preference for boys over girls. Although most pregnant women desired to have a family with an equal number of boys and girls, 27.6% preferred to have more boys than girls, whereas only 4.3% desired to have more girls than boys. Similarly, whereas 3.3% desired to have only boys, just 1.0% preferred to have only girls.

**Table IV.** Gender preference and ideal number of children

Characteristic	Number of patients (%)
Gender preference for fetus	
Boy	102 (39.2)
Girl	36 (13.8)
No preference	122 (47.0)
Total	260 (100.0)
Preference for first-born child	
Boy	22 (25.9)
Girl	17 (20.0)
No preference	46 (54.1)
Total	85 (100.0)
Gender preferences	
Only boys	10 (3.3)
Only girls	3 (1.0)
More boys than girls	83 (27.6)
More girls than boys	13 (4.3)
An equal number of boys and girls	125 (41.5)
Do not care	67 (22.3)
Total	301 (100.0)
Ideal number of children	
1	0 (0.0)
2	78 (25.9)
3	32 (10.6)
4	151 (50.2)
5	16 (5.3)
6	22 (7.3)
7	1 (0.3)
8	1 (0.3)
Total	301 (100.0)

**Table V.** Demand for sex selection among pregnant women in Pakistan

Characteristic	Number of patients (%)
Interest in sex selection (if paid by couple)	
Yes	19 (6.3)
No	229 (76.1)
Undecided	53 (17.6)
Total	301 (100.0)
Interest in sex selection (if paid by health insurance)	
Yes	55 (18.3)
No	174 (57.8)
Undecided	72 (23.9)
Total	301 (100.0)
Interest in sex selection (if feasible through medication)	
Yes	65 (21.6)
No	163 (54.1)
Undecided	73 (24.3)
Total	301 (100.0)
Moral attitude towards sex selection	
Legal	82 (27.2)
Illegal	147 (48.8)
Undecided	72 (23.9)
Total	301 (100.0)

The Pakistani gender bias becomes even more obvious when comparing pregnant Pakistani women with pregnant British women. In a 1993 survey conducted by the Centre for Family Research of the University Cambridge, 2359 British pregnant women have been asked ‘Do you mind what sex your baby is?’ Response options were ‘prefer a boy’, ‘quite like a boy’, ‘quite like a girl’, ‘prefer a girl’ and ‘no preference’. About 6% preferred a boy, 6% preferred a girl, 12% quite liked a boy, 19% quite liked a girl and 58% said they had no preference for a child of a particular sex (Statham *et al.*, 1993).

Likewise, a representative UK survey on sex selection conducted in 2003 indicated similar differences in gender preferences between Pakistani and British respondents. Among the 1001 UK citizens surveyed, 899 were white and 13 were of Pakistani origin. Although the number of Pakistanis in the sample was clearly too small to be considered representative, the differences are worth mentioning. Among the white UK citizens, 69% wished to have a family with an equal number of boys and girls, 3% preferred only boys, 2% only girls, 6% more boys than girls and 4% more girls than boys, and 15% stated that they did not care about the sex of their children. Among the UK citizens of Pakistani origin, 78% wished to have a family with an equal number of boys and girls, 10% preferred only boys and 12% preferred more boys than girls. In other words, none of the Pakistani respondents desired to have more girls than boys, leave alone, only girls (Dahl *et al.*, 2003b).

The statistically significant preference for boys over girls among our sample of pregnant women in Pakistan may reflect the economic burden daughters impose on their parents. As in India, Pakistani parents are expected to pay a considerable dowry to marry off their daughter. In rural areas, the dowry consists of land, farm animals, jewellery and household goods. In urban areas, the dowry can consist of a new apartment, electronic goods, cars and money (Terzieff, 2004). According to a recent newspaper article 'a bridal dress can cost half a million rupees (\$8,380) and the whole event sometimes runs to 20 million rupees (\$335,200). [...] In some wedding functions, the dowry items are displayed and announced by the bride's family elders. [...] Companies offer special deals to purchase dowry goods, including washing machines, TV sets, gold sets—all on "easy installments"' (Tohid, 2004). Obviously, having several girls, but no boys, can amount to a financial disaster for a Pakistani family.

Although there is a statistically significant preference for boys over girls among Pakistani women, fears about a distortion of the natural sex ratio seem to be unjustified. Given that only a small minority of 6.3% appear to be interested in social sex selection, permitting Pakistani couples to choose the sex of their children would not have any adverse demographic effects.

The representative UK survey mentioned above lends further support to the conclusion that Pakistanis are rather unwilling to use social sex selection. Although 21% of white UK citizens expressed interest in sperm sorting, 0% of Pakistani citizens expressed interest in this technology (Dahl *et al.*, 2003b).

As already indicated, for preconception sex selection to distort the natural sex ratio, couples need to control their sexual activity and engage in a reliable form of family planning. Given that 56.5% of Pakistani women stated that their pregnancy had not been planned, the potential demographic impact of social sex selection through sperm sorting is considerably reduced. In other words, even if 6% of Pakistanis were determined to take advantage of sex selection, only ~3% would actually be able to do so because half of the women will continue to conceive an unplanned baby—thus leaving the sex of the child up to chance.

There are several important limitations to our study. First, given that our sample included only 301 women, it may not be representative of the Pakistani population at large, even though our subjects were recruited at five quite different health care centres attending to women with quite different social backgrounds. Second, although UK citizens of Pakistani origin

may share most of the values of Pakistanis living in their home country, we cannot infer that they are sharing the same gender preferences and the same attitude towards social sex selection. For example, the birth of a daughter may not be an economic burden for Pakistani couples in the UK. Third, our study surveyed only women and does not tell us anything about the men's gender preferences and their willingness to employ social sex selection. According to British, Australian and American fertility clinics offering a reproductive service for sex selection, it is usually the woman who initiates treatment and has the final word on the sex of the child (Khatamee *et al.*, 1989; O'Reilly and Jones, 1999; Dow, 2002). However, among UK couples of Pakistani origin, it may very well be the husband who is more likely to encourage treatment and to decide about the sex of the child. Thus, further research should enquire not only about gender preferences, dowry payments and demand for sex selection but also about reproductive decision-making among UK couples of Pakistani origin. Fourth, our study used a questionnaire to obtain participants' views. This method is attractive because it is cost effective and less time consuming than other approaches. However, there could be limitations with such a method. Participants may not respond honestly. Particularly, in this study, women might have provided socially desirable answers, so they were not seen as going against the will of Allah. Therefore, it is important that future research uses both quantitative and qualitative research methods for studies on social sex selection.

Nevertheless, despite some limitations, this study has addressed the vital research question and suggested some useful recommendations, which need to be taken into account in any future research that may be conducted with Pakistani populations in the UK. Our survey shows that Pakistani women do show a preference for boys over girls, but the number of women willing to undergo sperm separation appears to be too small to cause a severe imbalance of the sexes.

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