

Attitudes about Sex Selection and Sex Preference in Iranian Couples Referred for Sex Selection Technology

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Abstract

Background: Gender preference is prevalent in some communities and using medical techniques to choose the baby's sex may cause the gender discrimination and gender imbalance in communities. Therefore, evaluating the gender preferences and attitudes towards using sex selection technologies seems to be necessary.

Methods: This cross-sectional study was conducted in Avicenna Fertility Center. Participants were 100 women with one child who were referred for sex selection. Data were collected through self-developed questionnaires. The questions were designed by the researchers at the experts' panel. To determine the validity of the questionnaire, the viewpoints of professors specialized in these issues were obtained. The statistical analysis of the data was performed using SPSS software (Version 11.5), and $p < 0.05$ was considered significant.

Results: Tendency toward the male was more than female sex (55.5% male, 15.5% female and 28.5% no tendency). Majority of participants agreed with sex selection with medical reason and sex selection in order to balance the family. Women's level of education had positive effect on agreements to fetal sex selection with medical and non-medical reasons ($p < 0.001$).

Conclusion: Although gender preferences were toward the male sex but this preference was not very strong. Most participants agreed with non-medical sex selection for balancing the sex composition of their children. It doesn't seem that non-medical sex selection for family balancing causes severe sex imbalance in Iran.

Keywords: Attitude, Gender preference, Iran, Sex selection.

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Introduction

The issue of child sex selection and gender preferences is as old as human life. It seems that the historical tendency to determine the sex of the child is rooted in religious, economic, cultural-social and medical issues. Until recently, sex selection seemed impossible, but modern medical technologies in the area of reproduction and genetics such as pre-implantation genetic diagnosis (PGD), introduce some assured methods for the couples regarding embryo sex selection be-

fore embryo transfer to uterus. Currently, the reasons for using child sex selection technology can be categorized into three groups: a) preventing from the birth of babies with severe sex-linked diseases, b) choosing the gender of the baby to balance the child sex combination in the family and c) the freeness to choose the gender of the baby (1, 2).

When sex selection is used for medical care, a small number of ethical issues are mentioned.

Problems usually arise when these methods are used in non-medical cases (3, 4). The sex selection technologies may cause gender discrimination or the gender imbalance in community (5-7). The most countries, including European ones, accepted the prohibition of sex selection except in medical cases. Furthermore, they concluded that there is not enough acceptable reason to prohibit sex selection in case of social causes such as family balancing (8-11). There are different gender preferences in some populations, particularly in some Asian countries. The decline in fertility in modern societies makes sex determination technology essential to prevent the repeated pregnancies (12). If couples have one or two children, they may be more inclined towards sex selection in order to have children of the preferred sex, or both sexes.

Investigating the causes of the couples' tendency to embryo sex selection before transfer to the uterus, especially in non-medical cases are very important factors for consideration. Social and ethical reasons of the tendency toward this attitude need to be assessed; moreover, the relation between this determination and the parents' demographic and social-economic situation should be examined (3). Many institutions in Europe, including the UK Department of Health, was studied the various aspects of the ethical, legal and social reasons for non-medical sex selection of embryos (13, 14). Unfortunately there is no official data about sex selection in Iran. Sex selection is carried out through PGD technique in some leading clinics in Iran. Although sex selection through PGD is allowed by religious scholars in Iran but its application is limited (15). Like many Asian countries, there are some gender preferences in Iran, and women with daughter are more likely to have an abortion. In a small-scale study of sheykhi (2012), 11.1% of women underwent induced abortion after sex determination (12). As induced abortion is illegal in Iran except in certain medical conditions (16), the sex selection demands more attention. The main objectives of the present study were evaluating the gender preferences and the attitudes of couples towards sex selection, and also determination of the factors affecting attitudes in using this method in Iran.

Methods

This cross-sectional study was conducted in Tehran, Iran in 2010-2011. Participants were 100 women aged 18-45 years who were referred to

Avicenna Fertility Clinic for sex selection. Single child families (families formed of parents and a child) were chosen because the parents' desire to have a second child or a baby of the other gender was more likely. Ethics Committee of Avicenna Research Institute approved the study proposal and the consent form.

Data were collected through self-developed questionnaires. The questions were designed by the researchers at the experts' panel with focus on available scientific documents. To determine the validity of the questionnaire, the viewpoints of professors specialized in these issues were obtained. Then inappropriate questions were excluded and the questionnaires were answered by 30 women referred to Avicenna Fertility Center in the pilot phase of the study. Based on the results of the pilot phase, some modifications were made in the questionnaire.

Each Likert-type question was scored from 1 to 5 (score 3 was a borderline score for each question). Attitudes toward gender preferences, religious values, ownership of body components and body products were assessed quantitatively by calculating the total marks obtained by each variable. The gender preferences section based on the importance of the role of the son or daughter from the perspective of parents included 5 questions with borderline score of 15. The gender based preferences section based on the importance of the role of the son or daughter from the perspective of the community included 13 questions with borderline score of 39. The religious values section included 12 items with borderline score of 36, ownership of body components section included 8 questions with borderline score of 24 and body products section included 6 questions with borderline score of 18. In body ownership section, the first item was the rights and control of the body owner over the components and parts of his body and the second item was the rights and control of the body owner over the products of its body. For religious values, five dimensions related to religious scope were evaluated. Moreover, answers were developed from a range of favorable response to undesirable and from 5 to 1 point. In gender preference section, the scores below the grade boundary indicate the positive attitude of respondents to male gender. Scores above the grade boundary for religious values, ownership of body components and body products, indicate the positive attitude of respondents to embryo sex selection. The results of the variables including parents' satisfaction with sex

composition of children and familiarity with various methods of embryo sex selection were examined based on the frequency of each answer.

The data are presented as frequency, median, mean and standard deviation. Chi-square tests and regression analysis were used for data analysis. The statistically significant level was considered less than 0.05. Data were analyzed by SPSS 11.5.

Results

The mean age of women recruited in the present study was 35.5 years (SD=4.6) and their marriage duration was 15 years (SD=5). The demographic data including ethnicity, religion and level of education of participants are listed in table 1. Most of participants had no prior experience of sex selection (82%); and agreed to have embryo sex selection experience (93%). The parental gender preferences and the gender preferences based on the importance of the role of the son or daughter from the perspective of the community, religious values, ownership and possession of body parts and body products are summarized in table 2. Based on the mean scores reported in the method, the parental gender preferences and the gender preferences based on the importance of the role of the son or daughter from the perspective of the community were toward the male sex (55.5% male, 15.5% female and 28.5% no tendency). Participants had a more positive attitude toward sex selection in terms of religious values, ownership of body part and body products.

The values related to satisfaction with sex composition of children, awareness about sex selection methods and the importance of sex selection were not statistically significant based on women's ethnicity ($p=0.623$, $p=0.302$, $p=0.560$) and their spouses' ($p=0.095$, $p=0.110$, $p=0.502$). The values related to agreements with sex determination with medical or non-medical reasons in women ($p=0.186$, $p=0.970$) and spouses ($p=0.576$,

Table 1. Demographic characteristics of women

Ethnicity	
Fars	46%
Turkish	20%
Kurdish	19%
Lor	10%
Arab	2%
Turkmen and others-Balochi (Others)	1%
No response	2%
Education	
Illiterate	5%
Junior high school	13%
High school or diploma	34%
BA degree	43%
MA or higher degrees	5%
Religion	
Shia	93%
Sunni	6%
Others (Christian, Jews, Zoroastrian)	1%

$p=0.180$) were not statistically significant. Values regarding satisfaction with sex composition of children, awareness about sex determination techniques, the importance of sex selection in general, in terms of women's education level ($p=0.791$, $p=0.126$, $p=0.876$) and their spouses ($p=0.745$, $p=0.303$, $p=0.092$) were not statistically significant. Values regarding agreement with embryo sex selection with medical and non-medical reasons in terms of women's level of education ($p=0.05$, $p=0.001$) and with medical reasons in terms of spouses' level of education were statistically significant ($p=0.001$) but the difference was not significant due to non-medical reason and spouses' level of education ($p=0.286$).

Regression analysis showed that higher levels of education affect sex selection with medical reasons. With higher education level, the average score for sex selection with medical reasons increased. The score was 0.21 for women and 0.24

Table 2. Parental gender preferences, gender preferences, religious values, ownership of body parts, body products in relation to ethnicity and the education level of women and their spouses

Variable	Mean	Median	Standard Deviation	Education level		Ethnicity	
				women	spouses	women	spouses
				p-value			
Parental gender preferences	12.97	13	4.113	0.001	0.001	0.547	0.437
Gender preferences	36.01	36	6.838	0.008	0.001	0.114	0.319
Religious values	47.59	48	4.989	0.082	0.010	0.523	0.596
Ownership of body parts	26.81	27	5.235	0.033	0.001	0.555	0.886
Body's production	22.67	22	2.985	0.004	0.042	0.529	0.898

Table 3. Frequency of responses to questions related to agreement with embryo sex selection

Questions	Very little	Little	To some extent	Much	Very much
Are you satisfied with the sex composition of your current child?	12	11	51	8	18
How familiar are you with the following methods in the field of fetal sex selection?					
1. Traditional methods such as traditional medicine, intercourse on particular days of the month, intercourse position, etc.	14	16	46	13	11
2. Determination of the sex of a fetus with special diet before and after intercourse	12	21	47	11	9
3. Determination of the sex of a fetus with recommended supplications	19	27	41	11	2
4. Sperm separation methods and inoculation with ovum	11	11	40	24	14
5. PGD: techniques to determine the sex of a fetus after the formation of the embryo and then transfer to uterus	17	24	34	12	13
To what extent are you satisfied with sex selection of your baby in case of medical reason (to reduce the risk of diseases associated with a particular sex, such as Hemophilia or Duchene)?	2	4	36	30	28
To what extent are you satisfied with sex selection of your baby in case of non-medical reason (to have an equal number of boys and girls, to have children of any sex, etc.)?	4	6	35	37	18
To what extent are you satisfied with the sex selection of your baby in case of non-medical reason in a family who has at least two children of one sex and no child of the other sex?	3	15	21	36	25
How important is it for you to determine the sex of your baby?	0	1	7	32	60

for men. Also with higher education level, the average score for sex selection with non-medical reasons increased 0.24 for women. In other words, level of education has positive effect on agreements with sex selection.

Satisfaction with sex composition of children, familiarity with various methods of embryo sex determination and agreements with embryo sex determination according to medical and non-medical reasons are summarized in table 3. A significant percentage of the participants were satisfied with their existing children's gender composition. Majority of participants had moderate knowledge about different methods of sex selection and agreed with medical sex selection reasons and non-medical sex selection in order to balance the family.

Discussion

In this research, participants were referred for sex selection and consequently most of them (93%) agreed to have the experience of embryo sex determination. In examining the parental gender preferences and the general gender preferences in participants, the tendency was toward the male sex. Son preference is an important issue

that has a significant impact on the risk of female birth and can change the reproductive behavior of couples. Zubair et al. performed a study in Pakistan on gender preference issues and evaluated the demand of pregnant women for sex selection of embryos before transfer to the uterus. Demand for boys was so high in some classes that may have caused gender imbalances. It also showed pregnant Pakistani women were embracing this technique (7). Conversely, in the study of Al-akour et al. and study of Statham in England, 58% and 82% of respondents did not have any gender preferences, respectively (17, 18). The results of similar studies are controversial and mostly dependent on the geographical areas. Although in the present study, results revealed the tendency to male sex, the tendency was not so strong. Therefore, it seems unlikely that this selection is subject to conditions such as gender discrimination and will result in gender composition changes of the population in future. Tendency for abortion has been more in women with daughter (26.51%) in the study of sheykhi (2012) in Iran (12). As son preference is a significant predictor for induced abortions in women (19, 20) and induced abortion is illegal in Iran except in certain medical conditions

(16), then it seems that allocating enough resources for sex selection services can reduce the incidence of illegal induced abortion in Iran.

In the present study, participants consent to embryo sex determination to balance the sex composition of their children has won a high percentage. In other words, most people would employ sex selection to have a balanced two-child family and balancing has more influence on the desire to sex selection than the male preference (21, 22). Furthermore, it can be inferred from the results that agreement of people to embryo sex determination with non-medical reasons in the present study was for balancing the sex composition of their children and not for sex discrimination which is especially common in some Asian countries. Similarly, in a study that was conducted on 809 couples during 18 months in England, it was revealed that the aim of majority of the clients for using sex determination techniques was to have a balanced family, and 95% of couples went to the center only for this reason, to have a balanced family (23). In a study conducted by Jain (2005), it was shown that infertile women seriously wanted to choose the sex of their fetus, especially those who had no children or who had children of the same sex (3). In the study of Himmel et al. (2008) in Germany, a positive attitude towards sex selection was more likely in infertile people if the respondents had a preference for either a boy or a girl and/or had an unbalanced family (24). Preference for having at least one child of each sex is a common pattern of parental gender preferences in many different social, economic and cultural contexts (25). Although the participants in this study were referred to the center for sex selection, they were satisfied with the sex composition of their existing children. It means that family balancing is more important than having a child with special sex composition.

The hypothesis that parents' religious values and their idea about "ownership of body components" may influence their attitude about sex selection was evaluated and based on the findings of the present study, it could be claimed that respondents had a positive attitude toward sex selection with respect to religious values, ownership of body parts and body products. The participants had moderate awareness of gender determination methods. Higher education levels resulted in more agreements to embryo sex selection with medical and non-medical reasons. Similarly, in the study of Kippen (2006) in Australia, respondents with bache-

lor degree or above were more likely to agree with this technology (26). In the study of Gleicher and Barad in USA (2007), Chinese, Arab/Muslim and Asian-Indian couples preferred male children more than female (27). However, sex selection in terms of different ethnicities was not significant in the present study.

Conclusion

In examining parental gender preferences and gender preferences, tendency was toward the male sex but it was not so strong. Most participants agreed to have the experience of sex selection and wanted to use this technique for gender balance in the family. Only women's level of education had positive effect on agreements to embryo sex selection with medical and non-medical reasons. The participants were satisfied with their existing child sex composition, although they were referred to the center for sex selection. In fact, providing sex selection services to Iranian couples seeking family balancing is unlikely to result in some conditions such as gender discrimination or severe sex imbalance. It seems that allocating enough resources for sex selection services can reduce the incidence of illegal induced abortion in Iran.

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Conflict of Interest

The authors have no conflict of interests to declare.

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