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Reasons for disclosure of gender to pregnant women during prenatal ultrasonography

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Background: The objective of this study was to determine the proportion of women who want to know fetal gender on antenatal ultrasonography and the reasons behind this.

Methods: A descriptive, cross-sectional study was carried out between March 10, 2012 and September 10, 2012 at two tertiary care hospitals (Dow University Hospital, Ojha Campus, and Lady Dufferin Hospital) in Karachi. In total, 223 pregnant women who attended the antenatal clinic and gave their consent were included in the study. Information was collected on a predesigned questionnaire.

Results: Of the 223 pregnant women, 109 (49.1%) were younger than 25 years. The majority (216, 96.9%) were Muslim, 164 (73.4%) were educated to different levels, 121 (54.3%) spoke Urdu, and 66 (29.6%) were primigravidas. Thirty-four (15.2%) women had a preference for a male child, 24 (10.8%) had a female preference, and 165 (74%) had no preference. Seventy (31.4%) women were interested to know the fetal gender. The association between education and gender preference was found to be statistically significant ($P = 0.004$) and also that between age and gender preference ($P = 0.05$), but no relationship was found between gender preference and gender of previous babies ($P = 0.317$ for males and $P = 0.451$ for females). Association of ethnicity was also not statistically significant ($P = 0.102$).

Conclusion: This study revealed that 31.4% of women were interested in disclosure of gender on prenatal ultrasonography and only15.2% women had a preference for a male child.

Keywords: gender determination, prenatal ultrasonography, Pakistan

Introduction

Ultrasonography has become a routine part of care for pregnant women. This technique uses very high frequency sound waves at 3.5–7 mHz emitted from a transducer.[1] It is possible to determine fetal gender by ultrasound more reliably from about 16 weeks onwards.[2] Medical reasons for fetal gender detection are X-linked disorders, ambiguity of genitalia, and assignment of zygosity in twin pregnancy. Gender preference varies from place to place and from society to society. Male preference is influenced by economic, religious, cultural, social, and emotional desires.[3,4]

A study reported by Gudex et al also demonstrated that preference is influenced by sociodemographic and obstetric factors in women.[5] In Nigeria, various studies have been conducted to determine views on prenatal gender determination.[6,7] Vlassof and Arnold reported male preference over female in Asian countries.[8] In some cultures, males are expected to take care of parents in old age and act as supporters. There is strong gender discrimination in villages in relation to food and education.[9] Gender selection is often assumed to occur in the People's Republic of China, India, and South

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Korea. India, South Korea, and most European counties have laws banning fetal gender determination; however, in Asian countries, these laws are ignored.[10] Edward and Thomson reported that in countries where male offspring are more desirable, fetal sexing during ultrasound examination has been outlawed due to female feticide.[11]

The accuracy of gender determination on ultrasonography increases with gestation from 70.3% at 11 weeks to 98.7% at 12 weeks and 100% at 13 weeks.[12] A study conducted by Odhe et al also reported an accuracy of 99%–100% after 13 weeks gestation in the absence of malformed external genitalia.[13] Incorrect determination of fetal gender can have a negative impact on a woman's psychological health and general acceptance of antenatal ultrasound.[14]

The objective of this study was to determine the proportion of women who want to know fetal gender on antenatal ultrasonography and the reasons behind this, as well as their gender preferences. The evidence has shown a trend of gender determination followed by selective abortion of female fetus after determination of gender during antenatal period, found commonly in Asian countries, ie, among people from India, the People's Republic of China, Korea, Vietnam, and the Philippines. This now also happens in North America, Canada, and other countries.[15] Therefore, this study was conducted in Pakistan to determine the situation regarding gender preference and gender selection, which could lead to gender imbalance.

Patients and methods

This was a cross-sectional study conducted between March 10, 2012 and September 10, 2012. A total of 223 pregnant women who came for antenatal visits in the outpatient department at Dow University Hospital or Lady Dufferin Hospital in Karachi were included in the study. Women were selected on the basis of the convenience sampling technique. Informed consent was taken from each participant after explaining the purpose of the study, with an assurance of confidentiality. Data were collected using a predesigned questionnaire which included age, gravidity, parity, ethnicity, socioeconomic status, education, any preference for gender and the reason behind this, and any wish to know the fetal gender. Data analysis was done using Statistical Package for Social Sciences (SPSS) version 16 software (SPSS Inc, Chicago, IL, USA). Descriptive statistics were calculated for all variables in the study. Frequencies and percentages were calculated. The chi-square test was applied for qualitative variables. A P-value <0.05 was considered to be statistically significant.

Results

In total, 223 pregnant women of mean age 26.34 ± 4.681 years were included in the study, of whom 109 (49.1%) were younger than 25 years (Figure 1). The majority of women (216, 96.9%) were Muslim, three (1.3%) were Christian, and four (1.8%) were Hindu. Regarding educational level, 59 (26.6%) were illiterate, 79 (35.6%) were matriculated, and 45 (20.3%) had an intermediate level of education. Thirty-seven (16.7%) women had studied up to graduation, and the remainder had completed post-graduate studies. Regarding ethnicity, 121 (54.3%) were Urdu-speaking, 33 (14.8%) were of Sindhi ethnicity, 27 (12.1%) were Punjabi, 24 (10.8%) were Balochi, and eight (4.5%) were Pashto. Sixty-six (29.6%) were primigravida, 58 (26%) were second gravida, 45 (20.2%) were third gravida, and the rest were at least fourth gravida.

Of the total study population, 34 (15.2%) women had a preference for a male child, 24 (10.8%) women had a female preference, and 165 (74%) had no preference (Figure 2). Regarding the reason for male preference, 76% considered the male as a source of income and propagator of the family name.

Table 1 shows the reasons for disclosure of gender on ultrasonography. Seventy (31.4%) respondents were interested in disclosure of fetal gender. Reasons for disclosure were curiosity, preparation for the new arrival, husband wanting to know, and in-laws wanting to know (12.1%, 17.5%, 2.2%, and 1.3%, respectively). In total, 153 (68.6%) women were not interested in disclosure of fetal gender. That it should be left "to God's will" was cited by 60.5% of women as the major reason for not wanting to know the baby's gender. Other reasons were

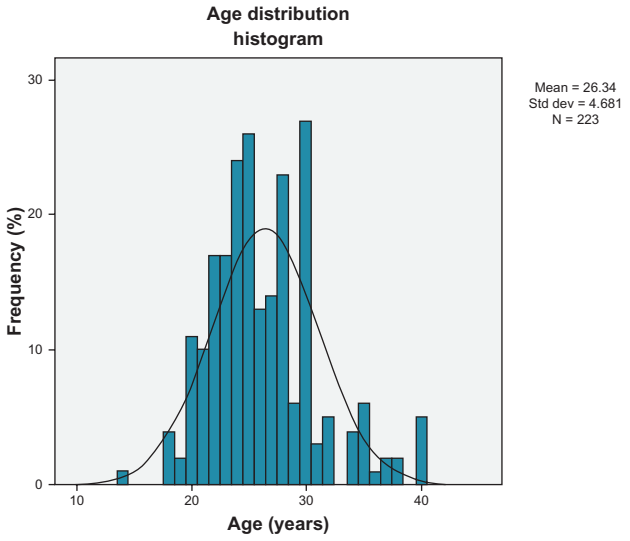

Figure 1 Distribution of age of women undergoing fetal ultrasonography.
Abbreviation: Std dev, standard deviation.

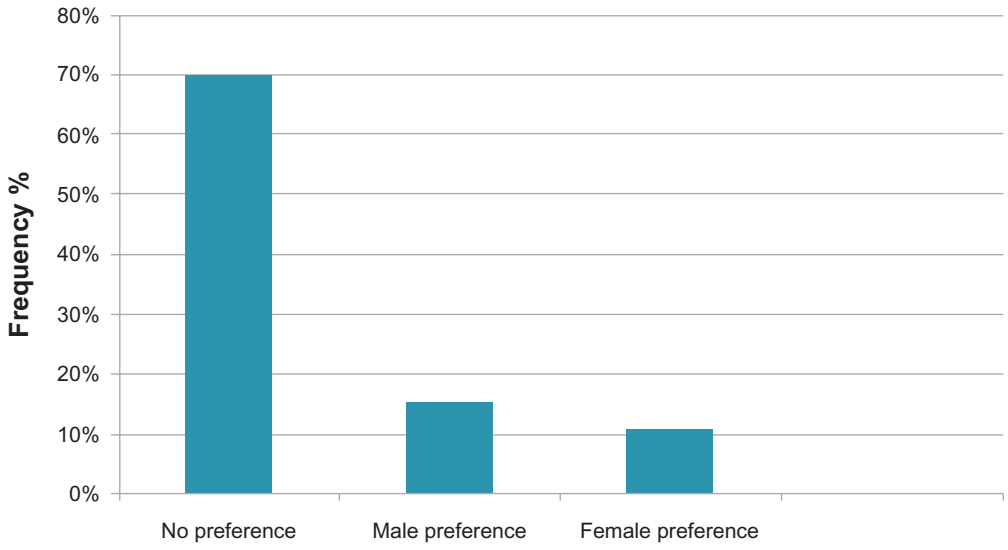

Figure 2 Distribution of women according to gender preference of fetus.

surprise, discouragement from partner, and that it was sinful to try to find out (4.9%, 1.3%, and 1.3%, respectively).

Gender preference was influenced by age and education level. Table 2 shows that 16% of women who were illiterate, 16.4% of those who had matriculated, 13.3% of those who had intermediate education, and 16.2% of those who were graduates had a male preference. On the other hand, 3.3% of women who were illiterate, 8.9% of those who had matriculated, 15.5% of those who had intermediate education, 16.2% of those who were graduates, and 66.6% of those who had postgraduate education had a female preference. There was no preference for gender determined in 81.3% of women who were illiterate, 65.8% of those who had matriculated, 86.6% of those who had intermediate education, 67.6% of those who were graduates, and 33.3% of those who had postgraduate education. A positive relationship was found between education and gender preference ($P = 0.004$).

The association between age and gender preference was also found to be statistically significant ($P = 0.05$). The relationship between gender preference and having had previous male babies or previous female babies was not statistically significant ($P = 0.317$ and $P = 0.451$, respectively). There was also no statistically significant relationship between ethnicity and preference for gender ($P = 0.102$), but a statistically significant association was seen between gender preference and socioeconomic status.

Table 1 Reasons for wanting to know fetal gender on antenatal ultrasonography (n = 70 [31.4%], 135 [68.6%])

Variable	Frequency	Percentage
Curiosity	27	12.1
Plan for new arrival	39	17.5
Partner wants to know	5	2.2
In-laws want to know	3	1.0
If know gender, wants termination	0	0
Reasons for not wanting to know fetal gender on antenatal ultrasonography (n = 153, 68.6%)		
Leave to "the will of God"	135	60.5
Partner does not want to know	3	1.3
Risk of error on ultrasound	1	0.4
Miscellaneous	8	3.6
Sinful to know the fetal gender	3	1.3
Surprise	11	4.9

Note: More than one category could be chosen.

Discussion

Male preference is widespread throughout the world, and there is strong discrimination against women. In the present study, we have found that 15.2% of 223 women preferred to have a male baby. In contrast, a study conducted in Jamnagar, Gujarat in 195 pregnant women by Vadera et al showed a male preference of 58.8% among respondents. Important reasons for male preference were social support and propagation of

Table 2 Level of education and gender preference

	Male	Female	n	Total
Illiterate	9	2	48	59
Matriculated	13	7	52	79
Intermediate	6	7	39	45
Graduate	6	6	25	37
Postgraduate	0	2	1	3
Total	34	24	165	223

Notes: Chi-square 22.623; *P*-value 0.004.
Abbreviation: n, no preference.

the family name.[16] Another cross-sectional, descriptive study of 203 pregnant women conducted by Kansal et al in Uttar Pradesh reported that 66% of participants had no gender preference.[17] These results are similar to those of our study, in which 74% of women had no gender preference.

With regard to male preference, in our study, 76% of respondents considered males as a source of socioeconomic support in old age. This frequency was found to be higher than in an Indian study reported by Siddharam et al, who found that 38.5% of participants had a male preference because of a desire to propagate the family name and only 27.5% considered males as a source of income.[18]

The present study revealed that 31.4% of women were interested in disclosure of fetal gender. In other studies concerning disclosure of fetal gender in Nigerian women, this percentage was 69.5%, and 64%.[6,7] More recently, another study conducted in Nigeria by Maaji et al reported that 95% of women were interested to know fetal gender. In that study, 81.8% of participants were Muslims, and no reason was given by most of them for gender preference. Around 49% had no formal education and, of the women who were not interested to know fetal gender, 45.5% reported that they would be satisfied with either gender. The results from that study are not consistent with ours.[19]

In our study, 12.1% of women were curious to know fetal gender. This finding is in agreement with that in a study conducted by Ekele et al, who reported curiosity in 18% of women.[21] In a study conducted among Ugandan women and health practitioners, Gonzaga et al[20] reported that all women were interested to know gender for reasons to do with shopping and preparation for their new arrival.[22] In our study, it was cited as 17.5%.

We found that 68.6% of respondents were not interested in knowing the gender of their baby, and 60.5% were content to leave it to "the will of God". This finding is similar to the rate of 61.8% reported by Kansal et al.[17] In the current study, 4.9% reported surprise as their reason for nondisclosure of gender, 1.3% considered it sinful to know the gender of the baby, and 0.4% did not want to take the risk of an error on sonography. These results are not consistent with those of a study reported by Kansal et al, who found surprise to be the reason in 16.1%, sin in 6.5%, and risk of error in 0.4% of women.[17] Incorrect fetal gender determination had an important negative impact on women's psychological health and general acceptance of ultrasonography.

Male preference is more predominant in South Asia and developing countries, particularly Bangladesh, the People's Republic of China, India, Republic of Pakistan, Korea, and Taiwan.[23] In Pakistan, preference for male over female gender is culturally embedded.[24] Preference for a male child was more common in women who had had no male child previously, in a study reported by Vadera et al.[16] That study was conducted in India, and 20% of women demanded female feticide. These results are not consistent with those of our study. In our society, the incidence of female feticide is very low when we compare it with other countries, where it has become a major crime. An increased level of education may change the thinking around male preference.[25]

Conclusion

In the current study, it was found that 31.4% of women were interested in disclosure of fetal gender on prenatal ultrasonography, and only 15.2% of women had a preference for a male child. It was determined that most women were interested to know the gender as part of preparation for their new arrival.

Disclosure

The authors report no conflicts of interest in this work.

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