The choice of gender: is elective gender selection, indeed, sexist?

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BACKGROUND: Like a number of international organizations before them, the American College of Obstetricians and Gynecologists (ACOG) recently issued an ethics opinion, which condemned all indications of elective gender selection as devaluatory to women and sexist and, therefore, given the choice, assumed automatic preference for male gender selection in all populations. This study intended to investigate this notion for accuracy. METHODS: We investigated the desired gender in 92 couples who had undergone between January 2004 and December 2006 first in vitro fertilization (IVF) cycles in attempts at gender selection for family balancing purposes. Their choices were then also investigated stratified for the ethnicity of the couple. RESULTS: Among 92 cycles, 36 cycles were selected for female and 56 for male (P = 0.037). An analysis based on the couples’ ethnicities revealed, however, considerable differences in gender selection patterns. Especially Chinese (21 out of 22), Arab/Muslim (5 out of 6) and Asian-Indian (5 out of 5) couples primarily selected for males. Other ethnicities, however, actually preferentially selected for female gender (34 female, 25 male selections in 59 cycles). Gender choices thus varied in a statistically significant way between ethnicities (P < 0.001). CONCLUSIONS: In an ethnically mixed patient population, elective gender selection for family balancing purposes in most ethnic groups does not represent a discriminatory procedure against female equality. However, cultural biases against females are, indeed, still maintained in some minority populations. Ethics opinions should be considerate of minority opinions, but should be based on prevalent sentiments in a majority of the population.

Keywords: sex selection; gender selection; in vitro fertilization (IVF); assisted reproductive technology (ART); preimplantation genetic diagnosis (PGD)

Introduction

Elective gender selection has remained controversial worldwide. In the United States (US), the issue had remained largely dormant until the Ethics Committee of the American Society for Reproductive Medicine (ASRM) published an opinion, potentially validating elective gender selection under selected circumstances (Ethics Committee of the American Society for Reproductive Medicine, 2001). This publication gave rise to controversy in the US (Gleicher and Karande, 2002; Robertson, 2002a), matching differences of opinion elsewhere in the world (United Nations, 1995; Human Fertilisation and Embryology Authority, 2003; FIGO, 2006).

Some ethics opinions (from major professional societies) have differentiated between ‘pre-fertilization’ gender selection by sperm sorting, and ‘post-fertilization’ sex selection through in vitro fertilization (IVF) and preimplantation genetic diagnosis (PGD), with the former considered more ethically acceptable than the latter (Robertson, 2002b). The reasons are complex, with many ethicists considering the creation of a human embryo as a differentiating step (ACOG, 2007). A recently issued opinion by the Ethics Committee of the American College of Obstetricians and Gynecologists (ACOG), however, placed a surprising degree of emphasis on a different argument: in following the reasoning of the International Federation of Gynecology and Obstetrics (FIGO, 2006), it considers all forms of elective gender selection as discriminatory and sexist (ACOG, 2007).

In its opinion, the ACOG committee states, ‘The committee shares the concerns expressed by the United Nations and the International Federation of Gynecology and Obstetrics that sex selection can be motivated by and reinforce the devaluation of women’. Continuing, the Committee concluded that, ‘...the use of sex selection techniques for family balancing violates the norm of equality between the sexes; moreover, this ethical objection arises regardless of the timing of the selection (i.e. preconception or postconception) or the stage of development of the embryo or fetus’ (ACOG, 2007).
Such an implied utilization of elective gender selection for sexist and discriminatory purposes, devaluatory to women, of course implies that, given the opportunity, a large majority of couples would choose gender selection for male offspring. This contention has been disputed on theoretical grounds (Dahl, 2003; Heyd, 2003; Dahl et al., 2006a), and based on population surveys (Dahl et al., 2003; Jain et al., 2005; Dahl et al., 2006b; Fejes et al., 2006), but still has lead to international regulatory and legal prohibitions (United Nations, 1995; Robertson, 2002b; Human Fertilization and Embryology Authority, 2003; FIGO, 2006), although, in an exception, the House of Commons Science and Technology Committee of the United Kingdom recently adopted less dogmatic recommendations (House of Commons, 2005; Pennings, 2005; Schulman, 2005).

The issue has, however, never before objectively been investigated. This study attempts such an investigation in a multi-ethnic US patient population, which chose to undergo gender selection procedures for family balancing purposes.

Materials and methods

Following extensive discussion, involving the Center’s Institutional Review Board, and discussed in detail elsewhere (Gleicher and Karande, 2002), our Center has been offering elective gender selection for family balancing purposes by IVF and PGD, in accordance with most recent ASRM guidelines (Ethics Committee of the American Society for Reproductive Medicine, 2004), since 2004. During that time period, 101 such cycles were performed, of which 92 were first treatment cycles.

Cycles were considered qualified for the study if embryology and informed consent records indicated that (at least) one purpose of PGD was elective gender selection for family balancing purposes. An objective need for family balancing was, in accordance with Robertson, considered to exist when at least one prior child was alive (Robertson, 2003). We, therefore, excluded a single case, where the cycle was performed on a single (Caucasian) female, in her first pregnancy, based on a psychiatric recommendation for female selection.

All patients in this series underwent gender selection by IVF and PGD, though six cycles, concomitantly underwent semen sorting, using the MicroSort sperm separation technique (Fugger et al., 1998). Nine cycles involved oocyte donations. The patients’ clinical, as well as embryology, records were reviewed to determine whether their gender selections were performed for elective conception with female or male embryos. If patients underwent repeat cycles, only their first IVF cycle was considered for analysis.

Records were also reviewed to establish ethnicity of the couple. Patients were assigned, based on the ethnicity of the female, although none of the couples demonstrated divergent ethnicity in between husband and wife. Caucasian and Hispanic patients were analyzed together because a differentiation was not reliably possible. Among 98 couples, 52 were Caucasian/Hispanic, 22 Chinese, 5 Asian-Indian, 5 African/African-American/African-Caribbean, 6 Arab/Muslim and 2 of other Asian ethnicities.

Statistical comparisons between groups were made using SPSS for windows, standard version 10.0.7. Data are, where applicable, presented as mean ± one standard deviation. Group outcomes were compared using Pearson chi-square, chi-square and Fisher’s exact test. A level of significance was defined as \( P < 0.05 \).

Since this study involved the retrospective review of medical records, and since informed consents, signed by all patients at our Center, allow for the anonymous evaluation of their records for study purposes, no approval from the Center’s Institutional Review Board (IRB) was required for this study. The Center’s IVF program is under annual IRB review and its gender selection practice has been approved (Gleicher and Karande, 2002).

Results

Among 101 gender selection cycles, 92 were first cycles. Among those, 36 (39.1%) were performed for the selection of female, and 56 (60.9%) for the selection of male embryos \((P = 0.037)\). Gender selection choices were to a statistically significant degree dependent on the couple’s ethnicity \((P < 0.001)\). Table 1 summarizes gender selections, broken down by ethnic backgrounds. As can be seen, there was obvious gender bias in favor of male selection among Chinese, Arab/Muslim and Asian-Indian couples. In contrast, Caucasian/Hispanic couples demonstrated obvious bias toward female selection. The number of couples from other minorities was too small to reach conclusions.

Mean ages did not differ significantly between ethnicities. They were 36.4 ± 5.4 (range 25–51) years for Caucasian/Hispanics, 36.4 ± 7.1 (range 22–47) years for Chinese, 33.4 ± 6.9 (range 25–41) for Asian-Indians, 34.2 ± 1.6 (range 33–37) years for women of African descendent, 31.5 ± 7.0 (range 22–41) for Arab/Muslims and 39.0 ± 12.7 (range 30–48) years for other Asians. Asian women were, however, overall younger than non-Asian patients (35.3 ± 7.3 years versus 36.2 ± 5.2 years; \( P = 0.006 \)). Women of younger age with greater statistical likelihood selected for male than female \((P = 0.016)\).

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Total</th>
<th>Female (%)</th>
<th>Male (%)</th>
<th>( P )-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian/Hispanic</td>
<td>52</td>
<td>31 (59.6)</td>
<td>21 (40.4)</td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td>22</td>
<td>1 (4.5)</td>
<td>21 (95.5)</td>
<td></td>
</tr>
<tr>
<td>Asian-Indian</td>
<td>5</td>
<td>0 (0)</td>
<td>5 (100)</td>
<td></td>
</tr>
<tr>
<td>African**</td>
<td>5</td>
<td>2 (40)</td>
<td>3 (60)</td>
<td></td>
</tr>
<tr>
<td>Arab/Muslim</td>
<td>6</td>
<td>1 (16.7)</td>
<td>5 (83.3)</td>
<td></td>
</tr>
<tr>
<td>Other Asian</td>
<td>2</td>
<td>1 (50)</td>
<td>1 (50)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>92</td>
<td>36 (39)</td>
<td>56 (60.9)</td>
<td>0.037</td>
</tr>
</tbody>
</table>

*Gender selection was to a statistically significant degree \((P < 0.0001)\) affected by ethnicity.

**Includes African, African-American and African Caribbean.

Discussion

The results of this study demonstrate overall a statistically larger demand for male than female gender selection. When these data are, however, further analyzed, it becomes apparent that the demand for males is driven by strong biases toward male selection in only some ethnic minorities. Except for Chinese, Arab/Muslim and Asian-Indian patients, no other ethnic group demonstrates a bias toward male selection. Indeed, the opposite is true, especially among Caucasian/Hispanic patients, where 59.6% of selections were for female. This finding confirms previously expressed opinions (Dahl,
mitted ethnic groups, Caucasian groups. Asian patients were, however, minimally younger
had no preference.
more girls, 5% with only boys, 4% with only girls and 27%
wished to have a balanced family, 7% wanted more boys, 6%
1992; Malhi and Singh, 1995). The 22 Chinese, 6 Arab/
Muslim and 6 Asian-Indian couples, who to a significant
degree favored male selection, represent the approximate
overall representations of these ethnic groups within our
center’s patient population. It is, therefore, reassuring that the
availability of gender section for family balancing purposes
does not appear to have selectively drawn couples from these
two minorities.

In the US, ethnic minorities are usually concentrated in large
urban centers. For example, Chinese minorities can be found in
largest numbers in New York City and San Francisco areas,
whereas Arab/Muslim populations concentrate in the
New York City and Michigan areas. The ethnic biases pre-
sented here toward male gender selection will, therefore,
only be visible in relatively small parts of the country.

Other minorities were represented in only small sample
sizes, and lack of obvious biases can, therefore, not necessarily
be understood as absence of such biases. Further studies, invol-
vping larger patient populations, are needed to fully absolve
other minority populations from anti-female biases.

At the same time, this study, also suggests that in a less eth-
ically diverse population, representing a more homogenous
Caucasian/Hispanic population, and thus a large majority of
the US population, one, indeed, can expect no bias toward
male selections and, potentially, even bias toward the selection
of females.

This observation suggests that in an ethnically diverse, and
economically developed country, like the US, the offer of elective
gender selection for family balancing purposes does not neces-
sarily violate the norm of equality between the sexes to the disfa-
vor of females, as suggested in the recent Ethics Opinion of
ACOG (ACOG, 2007), and, therefore, does not universally
appear to represent a discriminatory and sexist medical practice.

Yet, at the same time these findings raise the question that
how obviously existing biases toward male gender selection in
certain minority populations should be addressed. We have
given considerable thought to this issue but have been unable
to reach an unequivocal answer: on the one hand, we strongly
believe in the right of patients to choose the make up of their
families (Gleicher and Karande, 2002); however, our belief in
such rights is, of course, predicated on free choice for each indi-
vidual, which in an enlightened society will, as most published
data, and this study have demonstrated, lead to an approxi-
mately equal gender distribution, not discriminatory toward
females. When such free choice, based on ethnic habits and/or
pressures, is lacking, it would seem only fair to withhold
the right to choose the gender make up of one’s family. The
decision to withhold the right of elective gender selection
would, therefore, appear appropriate in countries where wide-
spread discrimination against females, indeed, exists.

Moral and ethical values, however, vary in different societies
and, as this study demonstrated, in different ethnicities within
US society. It would, therefore, appear mistaken to assume
that universal ethics opinion can be developed for worldwide
consumption, as suggested by the United Nations’ opinion on
elective gender selection (United Nations, 1995), and by some
individuals (Shenfield, 2005). Instead, developed
nations would be well advised to develop educational out-
reach programs for their ethnic minorities, which teach
non-discriminatory value systems, while allowing the conduct of practices, which are not abused by a large majority of the population.

It seems reasonable to assume that in developed countries ethnic biases will fade over time as new generations are influenced by their new homeland’s cultural habits. Our experience with elective gender selection also indicates that, independent of ethnicity, the choice to pursue this process is in over 80% of couples initiated by the woman (Gleicher and Barad, Unpublished data). In developed countries, with mixed ethnic populations, like the US, this observation suggests that a psychological investigation, prior to initiation of treatment, may allow for an objective differentiation between women who chose gender selection out of free will, and those who feel coerced. Such a psychological examination could then, in a non-discriminatory way, be used to determine who should, and who should not, be given access to selective gender determination of their offspring.

We in that sense agree with Dahl who commented that outlawing a harmless practice in one country, simply because it has been demonstrated to have potentially harmful effects elsewhere in the world, represents bad public policy (Dahl, 2005). Similarly, there is no reason to impose ethics opinions on a whole nation, simply because a small minority acts in an unethical fashion. Ethical advisories should, in their respective opinions, be more considerate of national value systems, and should not attempt to find consensus, based on lowest common denominators.

References
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