The desire for multiple pregnancy in male and female infertility patients

Tim J. Child\(^1\), Anna Maria Henderson and Seang Lin Tan

McGill Reproductive Center, Royal Victoria Hospital, Department of Obstetrics and Gynecology, McGill University, 687 Pine Avenue West, Montreal, Quebec H3A 1A1, Canada

\(^1\)To whom correspondence should be addressed at: Oxford Fertility Unit, Nuffield Department of Obstetrics and Gynaecology, University of Oxford, Women’s Centre, Level 4, John Radcliffe Hospital, Oxford OX3 9DU, UK. e-mail: timothychild@yahoo.com

**BACKGROUND:** It is apparent that many fertility patients consider multiple birth an ideal treatment outcome. We wished to evaluate the desire for multiple birth among patients, and the effect of patient demographics and recognition of the increased fetal risks of multiple pregnancy on this desire. **METHODS:** This was a prospective questionnaire study completed by 801 male and female infertility patients attending a tertiary level Canadian university fertility clinic. Two logistic regression analyses were performed with desire for multiple birth with next fertility treatment and recognition of the increased fetal risks of multiple pregnancy as the dependent variables. **RESULTS:** 41% of patients desired a multiple birth. Increasing duration of infertility or previous assisted reproductive treatment increased, and having previous children or recognition of the increased fetal risks decreased, this desire. Patient age or sex did not affect desire for multiple birth. Previous assisted reproductive treatment was associated with increased recognition of the fetal risks of multiple pregnancy. **CONCLUSIONS:** A significant proportion of fertility patients considers multiple birth an ideal treatment outcome. Recognition of the increased fetal risks of multiple pregnancy significantly reduced this desire. Patient education may play an important role in assisting physicians in the quest to reduce the contribution of assisted reproductive treatment to multiple births and their attending complications.

**Key words:** assisted reproductive treatment/complications/counselling/infertility/multiple pregnancy

---

**Introduction**

All assisted reproduction treatments are associated with increased rates of multiple pregnancy. This would be inconsequential except that multiple gestations are high risk for both the mother and her babies (Tan et al., 1992). Twins are associated with a 3–5-fold increase in the rates of fetal death, gestational diabetes mellitus, pre-eclampsia, preterm delivery and cerebral palsy, when compared to singletons. The outcome for triplets is worse (American Society for Reproductive Medicine, 2002). Furthermore, mothers of multiples experience considerable strain and psychological distress in raising their young (Goshen-Gottstein, 1980). Finally, the cost to health budgets of caring for multiple births is high, primarily due to complications of premature delivery. The estimated cost of care in the year 2000 for all assisted reproductive treatment multiple births in the USA was $640 million, greater than the cost of all the assisted reproductive treatment procedures (Collins, 2000). Consequently, there is growing recognition of the need to limit the contribution of assisted reproductive treatment to this problem (Gleicher et al., 1995; American Society for Reproductive Medicine, 2002).

Contrary to prevailing medical opinion, many infertility patients appear to consider multiple pregnancy an ideal treatment outcome. Assisted reproductive treatment may be expensive, invasive and stressful, and with per cycle pregnancy rates generally well below 50%, most couples require more than one treatment cycle to achieve success. A desire for an ‘instant family’ would not therefore be surprising. We performed a prospective study to quantify fertility patients’ desire for multiple birth and the extent to which demographic variables such as sex, age, duration of infertility, previous children, history of assisted reproductive treatment, and recognition of the increased risks of multiple pregnancy affect this desire.

**Materials and methods**

Male and female patients attending the McGill Reproductive Center, a university hospital tertiary level fertility clinic, during the year 2000 were asked to participate in the study. Patients were at all stages of treatment; some were primary consultations for infertility, while others were returning for review after one or multiple treatments. Each man and woman was asked to self-complete a questionnaire in the...
We ascertained baseline characteristics including age, sex, previous children, duration of infertility and previous assisted reproductive treatment (defined as previous IVF or stimulated IUI). We did not ask questions on socio-economic status or levels of previous education. Although consultations were government-funded, patients were required to pay for IVF and IUI treatment.

We asked whether patients considered that babies of a multiple pregnancy are at increased risk compared with singletons. For the outcome variable, patients were asked to state the desired number of babies with their next fertility treatment. A ‘1’ after twins, triplets or quadruplets was considered a positive response. Using multiple logistic regression analysis (SPSS release 9.0) we identified independent variables significantly associated with a positive response (i.e. stated desire for multiple pregnancy). A second logistic regression analysis was performed with recognition of the increased fetal risks in multiple pregnancy as the dependent variable.

### Results

A total of 801 patients completed the questionnaire (460 women, 341 men; response rate 55 and 46% respectively). The age and duration of infertility of respondents were similar to those of patients undergoing IVF during the same period, suggesting that the sample was representative of the clinic population. Demographics and the stated numbers of babies wanted with the next fertility treatment are listed in Table I. Forty-one per cent of all patients considered multiple pregnancy an ideal treatment outcome. Multiple logistic regression analysis was performed with desire for multiple pregnancy as the dependent dichotomous outcome variable (Table II). Increasing duration of infertility or history of assisted reproductive treatment was associated with a significant increase, and previous children or recognition of the increased fetal risks in multiple pregnancy a significant reduction, in the desire for multiple birth. Patient age and sex did not modify the desire for multiple pregnancy.

A second logistic regression analysis was performed with the aim of identifying variables associated with recognition of the increased fetal risks in multiple pregnancy (Table III). Independent variables entered into the analysis were patient sex and age, previous children, duration of infertility and history of assisted reproductive treatment. The only significant independent variable associated with the outcome was history of assisted reproductive treatment.

### Discussion

We found that a significant proportion of male and female infertility patients prefer multiple pregnancy to singleton birth. We subsequently identified, with multiple logistic regression analysis, independent variables associated with a desire for multiple gestation. Increasing desire for multiple birth with increasing length of infertility or previous cycles of assisted reproductive treatment may represent desperation for an ‘instant family’. Interestingly, patient age did not affect outcome. Patients with children were less likely to want a multiple birth. Possible explanations for this finding include recognition of the difficulties involved with rearing one young
child, let alone a number of the same age. Alternatively, patients with previous children may feel that only one child more is required for a complete family.

Patients recognizing the increased fetal risks of multiple pregnancy were significantly less likely to want this outcome [odds ratio (OR) 0.30, 95% confidence interval (CI) 0.20–0.46] (Table II). We did not investigate the means through which knowledge of the increased risks was acquired. However, the sole significant variable associated with recognition of the increased fetal risks was previous assisted reproductive treatment (OR 1.70, 95% CI 1.11–2.60) (Table III). Patients in our centre are informed of the increased risks of multiple pregnancy during clinic appointments and counselling sessions at each stage of treatment. These findings suggest that patient education may play an important role in reducing desire for multiple birth.

Reduced patient desire for multiple birth may assist physicians in minimizing the chance of a multiple gestation following treatment. Patients may conceivably be more willing to have fewer embryos transferred to the uterus in IVF treatment or a lower threshold for cycle cancellation following excessive follicular development during ovulation induction and timed intercourse/insemination therapy. Some groups are advocating single embryo transfer in good prognosis patients to reduce the risk of multiple pregnancy (Martikainen et al., 2001). Our data suggest that 41% of patients would actually prefer multiple embryo transfer in order to achieve multiple pregnancy. It is notable that history of assisted reproductive treatment was associated with heightened awareness of the increased risks but also increased desire for multiple birth. This could imply that whilst risk awareness increased following assisted reproductive treatment, treatment failure resulted in increasing desperation for a complete family. This suggests that counselling on multiple pregnancy risks is continued throughout a couple’s course of assisted reproductive treatment, and that the increasing desire or desperation for multiple birth after previous failure is considered when making treatment decisions.

Previous studies have examined infertility patients’ attitudes to multiple birth (Leiblum et al., 1990; Gleicher et al., 1995; Goldfarb et al., 1996; Murdoch, 1997; Pinborg et al., 2003). One study included 77 couples (Goldfarb et al., 1996) and another 154 couples undergoing infertility treatment (plus a control group of 72 female students of unproven fertility) (Leiblum et al., 1990). Gleicher et al. (1995) reported a much larger survey of 582 couples, though the responses of men and women were not considered separately. They mailed a questionnaire to 3800 unselected couples with infertility problems achieving a 15% response rate. In a postal survey of an undisclosed number of UK patients, Murdoch (1997) received 150 replies to a question asking the ‘ideal outcome of IVF treatment; one, two or three babies?’. Forty-five per cent of respondents considered multiple pregnancy an ideal outcome, whilst 31% desired a single child and 24% either one or two babies. A Danish postal survey of the mothers of all 3–4 year old twins (whether from IVF or spontaneous conceptions) and IVF singletons born during 1997 (n = 1769) showed a high desirability for multiple birth (Pinborg et al., 2003). More IVF twin mothers (85%) preferred twins as their first child compared with IVF singleton mothers (62%) or non-IVF twin mothers (60%). These studies generally show a positive attitude towards multiple pregnancy by infertile patients.

The findings of the current study of 801 patients support and extend these observations. In particular we invited the opinions of male partners and utilized logistic regression analysis to control for confounding variables. Our response rate of ~50%, though significantly higher than the 15% of Gleicher et al. (1995), was not as high as desired. We did not ask non-responders why they did not answer. The response rate may have been higher if patients had been interviewed in person, though this technique would have reduced the sample size significantly due to time limitations. However, the number of responses, 801, is greater than reported in previous similar studies.

We chose to ask the opinions of male partners since they are also part of the assisted reproductive treatment cycle, and would be expected to have some input into the decision on numbers of embryos to transfer during IVF. If we had found that men had a lower level of recognition of the increased risks of multiple birth and were significantly more likely to desire this outcome, then close examination of the pretreatment counselling offered would be required. As it was, we did not find a significant difference in responses between men and women. This probably indicates that the counselling imparted to patients before and during treatment is getting through to both partners. We did not analyse responses within and between couples. It may have been that the partners in a couple tended to answer similarly. This would not be surprising since

<table>
<thead>
<tr>
<th>Variable</th>
<th>OR point estimate</th>
<th>95% CI</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>0.970</td>
<td>0.935–1.007</td>
<td>NS</td>
</tr>
<tr>
<td>Duration of infertility (years)</td>
<td>1.000</td>
<td>0.951–1.053</td>
<td>NS</td>
</tr>
<tr>
<td>Sex (male versus female)</td>
<td>1.181</td>
<td>0.778–1.793</td>
<td>NS</td>
</tr>
<tr>
<td>Children with present or previous partner (yes versus no)</td>
<td>1.210</td>
<td>0.724–2.019</td>
<td>NS</td>
</tr>
<tr>
<td>History of assisted conception treatment (yes versus no)</td>
<td>1.701</td>
<td>1.113–2.599</td>
<td>0.014</td>
</tr>
</tbody>
</table>

The dependent variable was the recognition of the increased fetal risks of multiple pregnancy. Independent variables entered into the analysis are listed. Previous children and history of assisted conception treatment were dichotomized into ‘yes’ versus ‘no’.
they would tend to have similar demographics and to have undergone treatment and counselling together. Overall, however, the desire for multiple birth or the recognition of the increased risks does not differ between the sexes.

The aim of assisted reproductive treatment should be the birth of a healthy child. A singleton conception is most consistent with this outcome. The desire for multiple birth expressed by 41% of our Canadian patients is not consistent with prevailing medical opinion regarding the risks of multiple pregnancy. Recognition of the increased fetal risks of multiple gestation markedly reduces this desire. Patient education may play an important role in assisting physicians in the quest to reduce the contribution of assisted reproductive treatment to multiple births and their attending complications.

References
American Society for Reproductive Medicine, Practice Committee Report (2002) Multiple pregnancy associated with infertility therapy. ASRM, Birmingham, AL.

Submitted on March 25, 2003; resubmitted on September 24, 2003; accepted on October 28, 2003

Appendix

Questionnaire
Are you FEMALE
MALE

How old are you? _____ years old
For how long have you and your partner been having unprotected intercourse? _____ years and _____ months
How many children have you had (including with previous partners)? No. of children __
Which of the following fertility treatments have you had? (circle all relevant answers).
Yes/No — IVF (in-vitro/test-tube baby treatment)
Yes/No — IUI (drug stimulation of ovaries and insemination of sperm into the uterus)
Yes/No — Surgery to open blocked tubes
Yes/No — Other ________________

Put into order what you would consider to be the ideal number of babies to have in one pregnancy with your next fertility treatment, e.g. if you think the ideal outcome is quadruplets, and the second best outcome triplets, then put a ‘1’ by quads, a ‘2’ by triplets and so on until all 4 lines are filled.

___ Single baby (1 baby)
___ Twins (2 babies)
___ Triplets (3 babies)
___ Quadruplets (4 babies)

Do you think there are more dangers for the babies in a multiple pregnancy compared to a singleton pregnancy? YES NO