

Public attitudes in Edmonton toward assisted reproductive technology

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Objective: To determine public attitudes toward the use and possible limitations of assisted reproductive technology (ART).

Design: Mail survey based on telephone numbers selected at random by computer.

Setting: Edmonton.

Participants: A total of 602 Edmonton residents aged 16 years or more (57% of eligible subjects) reached by telephone agreed to participate. Completed questionnaires were received from 455 subjects (76%).

Main outcome measures: Attitudes toward egg donation, sperm donation, selective fetal reduction, embryo freezing and experimentation, and surrogacy, as determined through responses to five cases. Comments and demographic data were also solicited.

Main results: Overall, 66% and 63% respectively of the respondents would donate an egg or sperm to a sibling; the corresponding rates for donation to a stranger were 41% and 44%. Selective fetal reduction was supported by 47% of the respondents, although only 24% would support fetal reduction to eliminate fetuses of an undesired sex. Most (64%) thought that live embryo freezing should be permitted by law. A total of 74% agreed with surrogacy if done for medical reasons, but 85% opposed its use for reasons of convenience. Overall, 72% of the respondents thought that ART should be regulated. A total of 58% felt that physicians should be primarily responsible for determining the allowable limits of this technology, and 38% felt that the public should be primarily responsible. Only 21% agreed with public funding of ART. Religious affiliation strongly influenced attitudes toward ART.

Conclusions: Public support for ART varies depending on the circumstances of its use. Education is needed to make the general community aware of the various aspects of ART. The results of this survey should help physicians and governing bodies make informed decisions about the future directions of ART in Canada.

Objectif : Préciser les attitudes de la population sur l'utilisation des techniques d'aide à la procréation (TAP) et les restrictions éventuelles à cet égard.

Conception : Sondage postal d'après les numéros de téléphone choisis aléatoirement par ordinateur.

Cadre : Edmonton.

Participants : Au total, 602 résidents d'Edmonton d'au moins 16 ans (57 % des participants admissibles) rejoints par téléphone ont accepté de participer et 455 d'entre eux (76 %) ont rempli le questionnaire.

Principales mesures de résultats : Attitudes sur le don d'ovules ou de sperme, la réduction embryonnaire sélective, la congélation d'embryons et leur utilisation comme sujets d'expérience et les mères porteuses, en fonction de réponses à cinq cas. Les auteurs ont

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également demandé des observations et des renseignements démographiques.

Principaux résultats : Globalement, 66 % et 63 % respectivement des répondants donneraient un ovule ou du sperme à un frère ou à une soeur; les taux correspondants de don à un étranger étaient de 41 % et 44 %. Dans une proportion de 47 %, les répondants étaient favorables à la réduction embryonnaire sélective, mais 24 % seulement si cette procédure servait à éliminer un fœtus de sexe non désiré. Pour la plupart, les répondants (64 %) estimaient que la congélation d'un embryon vivant devrait être autorisée par la loi. Au total, 74 % étaient d'accord avec la maternité de substitution pour des motifs médicaux, mais 85 % était contre son utilisation pour des raisons d'ordre pratique. Globalement, 72 % des répondants pensaient que les TAP doivent être réglementés. Au total, 58 % étaient d'avis que les médecins devraient être les principaux responsables, pour ce qui est de fixer les limites autorisées à la technologie, et 38 % croyaient que le premier responsable devait être la population; 21 % seulement étaient d'accord pour qu'on accorde des fonds publics aux TAP. L'appartenance religieuse exerçait une forte influence sur les attitudes à l'égard des TAP.

Conclusions : Le soutien de la population aux TAP varie selon le contexte dans lequel elles sont utilisées. Il est nécessaire d'amorcer une campagne d'information afin que la collectivité en général connaisse les divers aspects des TAP. Les résultats de ce sondage devraient aider les médecins et les organismes de réglementation à prendre des décisions informées sur les orientations futures des TAP au Canada.

As the problem of infertility continues and the number of children available for adoption remains limited, the demand for any service that offers couples the hope of obtaining a child will persist. As a result, there has been a virtual explosion of research in the area of reproductive medicine in recent years. For some people this represents an opportunity to reassess ideas and direction; for others it represents a potentially dangerous development. Regardless of how one views assisted reproductive technology (ART), there is little doubt that the various proliferating investigations, experiments and treatments provoke many ethical questions.¹

These questions have led many individuals and groups to seek a legal framework for this area of medical practice and research. As evidenced by the formation of the Royal Commission on New Reproductive Technologies, the Canadian government has been seeking direction in this area. Yet, although technology related to infertility is advancing at a rapid rate, there have been limited efforts to determine public attitudes toward such technology and to educate the public about it.

Although the popular press does from time to time discuss ART, it is not possible to judge community attitudes or knowledge from media coverage.² Nonmedical sources tend to sensationalize certain ARTs (e.g., in-vitro fertilization), whereas other areas (e.g., artificial insemination by donor) are rarely discussed.³ The summary of a 1990 Angus Reid survey stated that "while Canadians are aware of many of the areas [related to ART] . . . their base of knowledge about many of these techniques and procedures is low" (*Toronto Star*, Oct. 16, 1990: D1). The survey also pointed out that most people "have not yet begun to consider many of the long term implications associated with the use of some of these technologies."

Public attitudes can be assessed by studying randomly selected samples of the population.² In the med-

ical literature, however, there are very few examples of such studies in the area of ART. National surveys have been conducted in Australia and the United Kingdom;² however, they were carried out before some of the more recent technologies became available. Smaller, more confined surveys have also been reported.^{3,4}

Although these surveys made only very limited use of case vignettes, surveys conducted in other areas of medicine that are complex from a bioethical perspective have recognized that case presentations effectively "simulate a realistic clinical context within which to survey decisions."⁵

We carried out a study to explore the attitudes of Canadians toward ART, its use and its possible limitations. The survey was designed with four basic guiding questions in mind: What degree of support or opposition is there for various types of ART? Which demographic factors influence the attitudes of respondents on these issues? Is there support or opposition for the monitoring and limitation of ARTs through the enactment of legislation? Which individuals or groups should take ongoing responsibility for standards and limitations in this area of medical practice?

Methods

The survey was conducted in Edmonton, which has a population of 614 665.⁶ A list of 2489 telephone numbers selected at random by computer (covering all the telephone exchanges in the city) was obtained from the Population Research Laboratory in the Department of Sociology, University of Alberta, Edmonton. Each number was reviewed and called between Oct. 15 and Dec. 15, 1991, up to four times. Through this process, 998 businesses, fax numbers, out-of-town listings and not-in-service numbers were eliminated. In addition, for 428 numbers there was no answer after repeated attempts. Of the 1063 people contacted, 398 (37%) did not wish to

participate and 63 (6%) were unable to participate owing to language or literacy problems. A total of 602 households contacted had someone 16 years of age or over who agreed to receive a questionnaire; however, two people refused to provide a mailing address. Questionnaires, together with stamped, self-addressed envelopes, were thus mailed to 600 households. A follow-up call was made about 2 weeks after each mailing to encourage the return of the questionnaire.

A minimum sample size of 400 was targeted, which would ensure a 95% confidence level for all dichotomous variables with the width of the confidence interval being 0.10.⁷ Assuming a 70% response rate among those who agreed to participate, we determined that 600 mailed questionnaires would be sufficient.

A degree of bias resulted through the two-stage process of telephone contact and mailing, and the two main sources of bias identified were nonresponse owing to lack of interest (37%), language or literacy problems (6%) or failure to return the questionnaire (14% [the proportion of the 1063 people contacted]); and self-selection (once the questionnaire was mailed the respondent within the household was largely self-selected).

The questionnaire consisted of five cases that illustrated clinical situations involving certain ARTs. Each case was followed by a number of specific questions, to which the respondent answered "Yes" (1), "Possibly" (2), "Probably no" (3) or "No" (4). General questions were included at the end of the questionnaire. Respondents were encouraged to provide specific and general comments as well as demographic information. The cases were designed to be easily understood and interesting to a nonmedical person and to assist the respondent in recognizing the significance of the various issues. The questionnaire was evaluated and critiqued by several physicians as well as by people who had participated in a variety of ARTs. It was then pretested to ensure participant understanding. A copy of the questionnaire can be obtained from the authors on request.

The five cases illustrated the following clinical situations.

- A 34-year-old nulligravid married woman who has gone through early menopause wishes to become pregnant. The questions focused on egg donation.
- A married man in his mid-30s is unable to father children. The questions focused on sperm donation.
- An infertile woman conceives following in-vitro fertilization and embryo transfer. She is found to be carrying triplets and is offered selective fetal reduction. The questions related to fetal reduction.
- The fate of seven embryos is at issue following in-vitro fertilization and subsequent cryopreservation. The parents have separated and have different attitudes toward the maintenance of the embryos. The questions related to cryopreservation, embryo experimentation and the potential rights of the parents and embryos.
- A case of gestational surrogacy was illustrated

and related questions were asked. This case read as follows.

A busy, well-informed, 30-year-old female lawyer wishes to have a child. She plans to have her egg mixed with sperm from a screened anonymous donor. Because of time constraints, she does not wish to carry the pregnancy herself. It is proposed that the pregnancy will be carried by an acquaintance, who, for a specified price, is willing and keen to do so, deliver the child, and give the child back to the genetic mother — the lawyer.

The following methods were used to analyse the data. The overall rate of acceptability was estimated by combining the responses "Yes" and "Possibly" and was then adjusted for sex and age by a direct method (i.e., sex-specific and age-specific rates were calculated from the sample and were weighted by the corresponding population proportions to give the overall rate).⁸ The possible demographic influences on attitudes were assessed in two ways. First, a bivariate method of Kruskal-Wallis one-way analysis of variance in the Systat microcomputer package (Systat Inc., Evanston, Ill.) was used to test the significance of the relation between a given four-point attitudinal scale and an individual demographic factor, a method most appropriate for analysing ordinal scales.⁹ Second, the log-linear model in the Statgraphics microcomputer package (Statistical Graphics Corp., Rockville, Md.) was used to conduct a series of stepwise regression analyses on categorical data obtained by cross-tabulating a specific attitudinal scale with selected demographic variables, thus enabling interaction among demographic variables to be tested.⁴

Results

Of the 600 questionnaires mailed out 455 (76%) were returned by Jan. 15, 1992. A total of 70% of the respondents were female. The age and sex distribution of the sample and of the population of Edmonton aged 16 years or more in 1991 is shown in Table 1. Other demographic characteristics of the respondents are given in Table 2.

The results indicated similar attitudes toward egg and sperm donation. Overall, 66% and 63% of the respondents were willing to donate (or encourage a family member to donate) an egg or sperm respectively to a sibling (Table 3). The corresponding figures for a close friend were 49% and 49% and for a stranger 41% and 44%. Only 12% and 13% of the respondents thought that an egg or sperm donor should have any legal rights or responsibilities related to a resulting child. However, 57% and 59% thought that when the child reaches an appropriate age he or she should have access to information about the biologic mother or father. Although most people did not feel that they would donate eggs or sperm to unrelated people, 77% and 78% opposed the

enactment of laws that would ban this practice.

Almost half of the respondents (47%) agreed with selective fetal reduction in the clinical situation described (Table 4). However, only 24% agreed that parents should have the option to eliminate fetuses of a specific sex. Overall, 50% of the respondents felt that there should be laws prohibiting selective fetal reduction.

Over half (56%) of the respondents felt that embryos should have protection from destruction, even if both the parents wish to have them destroyed (Table 5). Almost half (47%) agreed that it should be legally permissible to donate live embryos for experimentation. Nearly two-thirds of the respondents felt that live embryo freezing should be permitted by law.

The majority (85%) of the respondents opposed surrogacy for reasons of convenience (Table 6). However, 74% found the practice acceptable if a woman had serious medical problems that rendered her incapable of carrying a pregnancy. A total of 31% felt that the surrogate mother should have rights and responsibilities related to the child following the birth.

General questions

Over half (54%) of the respondents felt that they were not adequately informed about ART (Table 7). The figure for those with a university degree was 51% and for those with a grade 12 education or less 58%. Those with at least one child were more inclined to state that they were adequately informed about ART than those without children.

Most of the respondents (72%) felt that the government should introduce legislation to regulate both research into and the availability of specific types of reproductive procedures and technologies (Table 7).

A total of 58% of the respondents felt that physicians should be primarily responsible for deciding the allowable limits for ART. A substantial proportion (38%) stated that the public should set allowable limits, 23% indicated that ethical experts should have a role in deciding the limits, 12% favoured primary involvement

from politicians, and 6% felt that religious leaders should set the allowable limits. Many respondents indicated that more than one group should share primary responsibility for decision-making in this area.

Of the respondents 79% indicated that taxpayers should not be required to pay for ART. Interestingly, university graduates were more likely than those with less formal education to favour this source of payment. Respondents with a history of infertility were more likely than those without such a history to feel that taxpayers should financially support these procedures.

Table 2: Demographic characteristics of the respondents

Characteristic	No. (and %) of respondents
Marital status (n = 454)	
Married	250 (55)
Common-law	37 (8)
Single	101 (22)
Separated or divorced	45 (10)
Widowed	21 (5)
No. of children (n = 452)	
0	173 (38)
≥ 1	279 (62)
Infertility experienced (n = 445)	
By self or partner	43 (10)
Not experienced	402 (90)
Formal education completed (n = 450)	
Secondary school or less	175 (39)
College or technical program	165 (37)
University or postgraduate	110 (24)
Religious affiliation (n = 448)	
Roman Catholic	120 (27)
Evangelical	30 (7)
Protestant	173 (39)
Other belief	49 (11)
Atheist, agnostic or no religious belief	76 (17)
Voting preference (n = 424)	
New Democratic Party	74 (17)
Liberal Party	51 (12)
Progressive Conservative Party	39 (9)
Reform Party	43 (10)
Other or undecided	217 (51)

Table 1: Age and sex distribution of a random sample of Edmonton residents and of the population of Edmonton aged 16 years or more in 1991

Age, yr	No. (and %) of subjects			
	Sample (n = 455)		Population (n = 475 400)	
	Female	Male	Female	Male
16-19	10 (2.2)	7 (1.5)	14 574 (3.0)	15 451 (3.2)
20-29	101 (22.3)	54 (11.9)	62 352 (13.1)	60 691 (12.8)
30-39	91 (20.1)	38 (8.4)	58 401 (12.3)	60 941 (12.8)
40-49	45 (9.9)	13 (2.9)	36 402 (7.7)	37 362 (7.9)
≥ 50	70 (15.5)	24 (5.3)	70 365 (14.8)	58 861 (12.4)
All*	317 (70.0)	136 (30.0)	242 094 (50.9)	233 306 (49.1)

*Two respondents did not state their sex.

Demographic factors affecting attitudes

Sex: The women were less supportive than the men of the use of ART. For example, most of the men stated

that they would donate sperm to an unrelated person, but most of the women would not encourage this practice. Most of the women would not donate an egg to an infertile friend, but most of the men would encourage their

Table 3: Acceptability of egg and sperm donation

Characteristic of respondent	No. (and %*) of respondents who would donate; recipient					
	Egg			Sperm		
	Sister	Friend	Stranger	Brother	Friend	Stranger
Sex						
Female	200 (64)	143 (46)†	123 (40)	190 (60)	134 (42)‡	118 (37)‡
Male	92 (68)	78 (58)	59 (43)	90 (67)	84 (63)	73 (54)
Age, yr						
16–29	122 (71)	95 (56)†	74 (43)	117 (68)	93 (54)†	80 (47)
30–39	86 (68)	67 (53)	53 (42)	81 (63)	66 (51)	54 (42)
40–49	34 (59)	26 (45)	22 (38)	31 (53)	23 (40)	20 (34)
≥ 50	51 (55)	33 (36)	33 (36)	52 (55)	36 (38)	37 (39)
Formal education completed						
Secondary school or less	115 (66)	82 (48)	72 (42)	109 (63)	84 (48)	71 (41)
College or technical program	110 (67)	87 (53)	70 (43)	106 (64)	84 (51)	76 (46)
University or postgraduate	66 (61)	50 (46)	38 (35)	64 (58)	48 (44)	42 (38)
Religious affiliation						
Roman Catholic	77 (64)†	51 (43)†	40 (34)‡	71 (60)‡	51 (43)†	41 (35)‡
Evangelical	9 (31)	8 (28)	4 (14)	8 (27)	5 (17)	3 (10)
Protestant	111 (65)	84 (50)	81 (48)	112 (65)	86 (50)	83 (48)
Other belief	32 (65)	28 (57)	17 (35)	31 (63)	27 (55)	20 (41)
Atheist, agnostic or no religious belief	60 (79)	49 (64)	39 (51)	55 (72)	47 (62)	43 (57)
Overall weighted %	66	49	41	63	49	44

*In tables 3 to 8 the denominators vary according to the number of responses obtained, a dagger (†) indicates a group difference at the 5% level of significance, based on Kruskal–Wallis one-way analysis of variance (ANOVA), and a double dagger (§) indicates a group difference at the 1% level of significance, based on Kruskal–Wallis one-way ANOVA.

Table 4: Acceptability of selective fetal reduction

Characteristic	No. (and %) of respondents who agreed	
	In general	For sex selection
Sex		
Female	136 (43)	56 (18)‡
Male	71 (53)	46 (34)
Age, yr		
16–29	83 (49)	46 (27)
30–39	58 (46)	25 (20)
40–49	28 (48)	14 (24)
≥ 50	38 (40)	17 (18)
Formal education completed		
Secondary school or less	70 (40)	34 (19)
College or technical program	83 (51)	36 (22)
University or postgraduate	53 (49)	31 (28)
Religious affiliation		
Roman Catholic	44 (37)‡	22 (18)†
Evangelical	6 (20)	1 (3)
Protestant	83 (48)	33 (19)
Other belief	24 (49)	12 (24)
Atheist, agnostic or no religious belief	48 (65)	32 (42)
Overall weighted %	47	24

female partner or family members to donate an egg under such circumstances. Most of the women opposed embryo experimentation, whereas most of the men supported it. Whereas 82% of the women were opposed to selective fetal reduction on the basis of sex, 34% of the men were supportive of this practice. A total of 88% of

the women opposed surrogacy for reasons of convenience, as compared with 78% of the men. Finally, 82% of the women opposed payment for ART by the taxpayer, as compared with 76% of the men.

Age: Respondents 40 years of age or more were less supportive of ART than those under the age of 40.

Characteristic of respondent	No. (and %) of respondents who accepted	
	Right to protection from destruction	Donation for experimentation
Sex		
Female	173 (58)	123 (40)‡
Male	71 (52)	77 (57)
Age, yr		
16–29	100 (59)	90 (53)†
30–39	77 (63)	60 (48)
40–49	25 (44)	19 (33)
≥ 50	42 (48)	32 (36)
Formal education completed		
Secondary school or less	108 (64)‡	66 (39)
College or technical program	90 (56)	80 (49)
University or postgraduate	45 (44)	52 (50)
Religious affiliation		
Roman Catholic	73 (64)	51 (44)†
Evangelical	11 (46)	3 (11)
Protestant	98 (57)	83 (49)
Other belief	25 (53)	20 (43)
Atheist, agnostic or no religious belief	34 (45)	42 (56)
Overall weighted %	56	47

Characteristic of respondent	No. (and %) of respondents who accepted	
	For reasons of convenience	For medical reasons
Sex		
Female	37 (12)†	227 (72)
Male	30 (22)	108 (79)
Age, yr		
16–29	30 (17)	140 (82)‡
30–39	16 (13)	99 (77)
40–49	8 (14)	41 (71)
≥ 50	13 (14)	56 (59)
Formal education completed		
Secondary school or less	18 (10)‡	125 (71)
College or technical program	23 (14)	133 (82)
University or postgraduate	24 (22)	75 (68)
Religious affiliation		
Roman Catholic	8 (7)	89 (75)‡
Evangelical	1 (3)	7 (23)
Protestant	25 (14)	134 (78)
Other belief	12 (24)	34 (69)
Atheist, agnostic or no religious belief	19 (25)	68 (89)
Overall weighted %	15	74

For example, the former were less likely than the latter to accept embryo freezing (54% v. 66%) and surrogacy for medical reasons (64% v. 79%).

Education: Those with more than a grade 12 education were more likely than those with at most a grade 12 education to support public funding of ART. As well, university graduates were less likely to accept the right of embryos to protection from destruction (41% v. 62%). Log-linear analysis indicated that sex did not influence the level of education.

Fertility status: Respondents who had experienced infertility appeared to be more supportive of ART than those who had not. Table 8 indicates differences between these two groups.

Religious affiliation: Religious affiliation strongly influenced attitudes toward ART. Few respondents identified themselves as being of the Islamic, Hindu or Jewish faith. Those with Evangelical Christian beliefs were

the least supportive of all forms of ART. Those with a Roman Catholic or Protestant affiliation were more supportive of ART, and those who described themselves as atheists, agnostics or without any religious belief were the most supportive.

Log-linear analysis showed that religious affiliation was the most significant variable influencing respondents' attitudes on most questions asked. Furthermore, religious affiliation was strongly related to sex but not to level of education. More male than female respondents identified themselves as atheists, agnostics or without any religious belief (24% v. 14%), and fewer male than female respondents reported an Evangelical (4% v. 8%) or Protestant (30% v. 42%) affiliation.

Voting preference: There was some correlation between voting preference and attitudes toward ART. Support for ART was highest among respondents who indicated a preference for the New Democratic Party

Characteristic of respondent	No. (and %) of respondents		
	Felt adequately informed about ART	Supported laws to regulate ART	Supported public funding for ART
Sex			
Female	145 (46)	230 (74)	56 (18)†
Male	61 (45)	92 (69)	33 (25)
Age, yr			
16-29	69 (40)†	134 (79)	29 (17)†
30-39	60 (47)	90 (71)	35 (28)
40-49	21 (38)	41 (73)	14 (24)
≥ 50	56 (60)	58 (62)	11 (12)
Formal education completed			
Secondary school or less	73 (42)	126 (74)	21 (12)‡
College or technical program	77 (47)	123 (75)	39 (24)
University or postgraduate	54 (49)	73 (69)	28 (25)
Religious affiliation			
Roman Catholic	48 (41)	94 (80)†	22 (19)†
Evangelical	20 (67)	26 (93)	1 (3)
Protestant	81 (47)	117 (68)	33 (19)
Other belief	19 (39)	32 (67)	9 (18)
Atheist, agnostic or no religious belief	34 (45)	50 (68)	22 (29)
Overall weighted %	46	72	21

Status	No. (and %) of respondents who agreed with		
	Child's right to access to information about biologic parent		Surrogacy for medical reasons
	Mother	Father	
History of infertility (n = 43)	31 (76)†	31 (74)†	35 (81)
No history of infertility (n = 402)	227 (57)	223 (56)	294 (74)

(NDP). For example, the proportion of respondents who would donate (or encourage a family member to donate) an egg or sperm to a friend ranged from 59% to 61% for those preferring the NDP to 28% to 34% for those favouring the Progressive Conservative Party. In general, those favouring the latter party were least likely to support ART, and those who indicated a preference for the Liberal Party or the Reform Party fell somewhere in the middle.

General comments

Numerous comments were offered by the respondents. Three main sentiments were expressed.

- Many respondents felt that ART interfered with or disturbed the natural course of reproduction. Comments such as "Nature should be allowed to take its course" and "This is God's area and man has no business here!" were common.

- The most vociferous comments related to surrogacy, particularly for reasons of convenience. Numerous respondents questioned how a woman who does not have time to carry a pregnancy would have time to raise a child. Comments included "What is this, Dial-a-Baby?" and "Wombs to Rent!"

- There were many comments related to public funding of ART. These comments may be summarized by the statements "We pay enough taxes" and "If individuals want these procedures . . . they should pay for them."

Discussion

Because the lack of general knowledge about ART³ (*Ottawa Citizen*, Sept. 19, 1990: A14) may in itself be an impediment when public opinion is sought, the use of the five cases proved very effective in helping untrained people to understand the intent and relevance of the questions asked. Many respondents indicated that the cases and questions provoked much thought and consideration about previously unfamiliar subject matter. Although a degree of bias did result through the two-stage process of telephone contact followed by mailing (female subjects, younger subjects and educated subjects were the most likely to respond), thoughtful response would not have been facilitated by the brief and immediate format of a telephone survey, given the length of the questionnaire and the complexity of the issues raised.

The bias toward women aged 20 to 39 years may suggest that women in this reproductive age range have a much greater interest in and concern about this area of medicine than does the general population. Because there were some significant sex-based differences in results, it is important that issues related to ART be discussed and decisions be made with adequate representation from this segment of the population. In many areas women expressed a more cautious approach

to ART than men. This result is in keeping with other published studies⁴ and may be related to women's close biologic tie to reproduction.

We found that the respondents who had experienced infertility were more supportive of ART than those who had not. It may be that people who are more likely to use ART are also more likely to support its funding and availability. Most of the respondents who had experienced infertility agreed with the right of children conceived from donated eggs or sperm to have access to information about their biologic mother or father at an appropriate age. This clearly indicates that, despite this group's vulnerability to emotional sequelae to such openness, society's greater acceptance of open adoption and increased access to information about birth parents have affected attitudes across the population.

Support for egg and sperm donation decreased with increasing distance between the donor and the recipient. It appears that anonymity is not an overriding concern, because the likelihood of contact with resulting children is significant. Furthermore, it may be inferred that participants in such procedures may desire increased access to information about donors.

Religious affiliation strongly influenced attitudes toward ART. This is not surprising, as this field of medicine continues to challenge not only the way we look at the physiologic aspects of reproduction but also the way we view relationships, sexual function, parenthood and the beginning of life itself. It is vital that amid the more technical questions related to ART the central place that ethics have for individuals and for society is kept in perspective.

It is evident that the context in which technologies are used is a vital factor in people's attitudes. This was particularly noticeable in the area of surrogacy. Respondents indicated that the setting of some limits for the use of ART is important. It seems inevitable that limits will be set, whether through legislation, case-by-case judgments by the judiciary or financial constraints.

Respondents indicated a high level of respect for and trust of medical practitioners, in that a large proportion felt that physicians should, in consultation with the public, have primary responsibility for setting guidelines for ART. Because both public opinion and the continuing pressure on health care resources will necessitate some limits on public funding of ART, it is vitally important that physicians directly involved in this field and those involved through the referral of patients participate fully in the decision-making process and in public education.

Conclusions

We found that public support for ART varies according to the circumstances of its use. There is strong evidence that both physicians and the public should be primarily responsible for determining the allowable lim-

its for this technology. It is also clearly evident that people in Edmonton do want legislation in some form to regulate ART and, for the most part, do not support public funding of these technologies. Finally, it is evident that education is needed to make the general community aware of the various aspects of ART.

Our purpose in carrying out this survey was to determine public attitudes toward ART, with a view to helping health care professionals and medical associations make decisions about the use and limitations of such technology. Because of the pivotal role physicians play in implementing and setting standards for such technology, and because the results clearly indicate that most people entrust the medical profession with such authority, it is particularly important that the medical community be aware of the views of the public.

We hope that our results will serve as both an impetus and a baseline for future surveys. As technology continues to expand, as education of the public increases, and as the field of bioethics receives more attention, it will be useful to determine whether public attitudes have changed and what forces might cause attitudes to change in a given direction. A national study would be useful in determining whether there is consistency of thought and attitude throughout the country. Finally, a similar study assessing the attitudes of physicians would not only raise professional awareness but also help determine the similarities or differences in the views of physicians and the public. One could then, over time, assess how public attitude affects, and is affected by, the views of the medical community. The results of this and future studies will enable physicians and governing bodies to further explore this area and make informed decisions about future directions for ART.

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