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by Tracey Bushnik, Jocelynn Cook, Edward Hughes
and Suzanne Tough

October, 2012



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.	not available for any reference period
..	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0 ^s	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
P	preliminary
r	revised
X	suppressed to meet the confidentiality requirements of the <i>Statistics Act</i>
E	use with caution
F	too unreliable to be published
*	significantly different from reference category ($p < 0.05$)

Seeking medical help to conceive

by Tracey Bushnik, Jocelynn Cook, Edward Hughes and Suzanne Tough

Released online October 17, 2012

Abstract

Background

The demand for therapies to assist conception is growing in a number of countries including Canada. This study provides estimates of the number and characteristics of couples who sought medical help for conception and identifies the interventions and/or techniques they used.

Data and methods

The data are from the Infertility Component of the 2009/2010 Canadian Community Health Survey. The analysis examines couples in which the woman was aged 18 to 44, resulting in 3,656 respondents. Percentages, means and confidence intervals were calculated. Two logistic regression models were run to estimate associations between socio-demographic characteristics and seeking medical help to conceive.

Results

About three in four couples reported having tried to become pregnant. Of these, 15% had sought medical help for conception. Among those who had sought help for conception, 68% reported tracking the menstrual cycle and ovulation; 42% reported using fertility-enhancing drugs; 19% reported using assisted reproductive techniques; and 29% reported "other" medical treatment.

Interpretation

Given the trend toward delayed childbearing, the demand for medical help to conceive may be greater in the future.

Keywords

Assisted reproductive techniques, fertility, infertility, pregnancy

Authors

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Since 1990, the percentage of married or cohabitating women in Canada who report that they intend to have a child has hovered around 92%.¹ Recent studies, however, have found that 4% to 17% of couples in industrialized countries experience an involuntary absence of conception lasting at least 12 months.^{2,3} In Canada, the prevalence of past-12-month infertility rose from 5% in 1984 to a range of 12% to 16% in 2009/2010.⁴

Although not every couple with problems conceiving seeks medical help,⁵ the demand for therapies is growing. Data in the Canadian Assisted Reproduction Technologies Register (CARTR) on the use of assisted reproductive techniques (ART) show a steady increase in the number of procedures performed between 1999 and 2008.⁶ Similar increases have been observed in Australia and New Zealand,⁷ the United States,⁸ and Europe.⁹

CARTR contains information about the per-cycle outcomes of specific types of ART, but information about ART at the patient level is limited. As well, other methods employed to improve the chances of conception, such as fertility-enhancing drugs are not included in CARTR.

The purpose of this analysis was to determine the number and characteristics of couples who seek medical help for conception, and to identify the medical

interventions and/or techniques they used. Based on data from the Infertility Component of the 2009/2010 Canadian Community Health Survey, this study estimated the prevalence of help-seeking among couples trying to get pregnant. The association between seeking help and the couples' socio-demographic characteristics was examined, as were the methods they used to try to achieve pregnancy.

Methods

Data source

The data are from the Infertility (IFT) Component of the 2009/2010 Canadian Community Health Survey (CCHS) conducted by Statistics Canada. The target population of the IFT Component consisted of opposite-sex couples in the 10 provinces, with a female spouse or partner aged 18 to 49, who were living

together in the same household. The CCHS was not administered to full-time members of the Canadian Forces or to residents of the three territories, Indian Reserves or Crown lands, institutions, and certain remote regions.

The CCHS used a multistage stratified cluster sampling strategy.¹⁰ Data for the IFT Component were collected from September through December, 2009, and in July and August, 2010. Of the households selected during these periods, 41,501 were in-scope for the CCHS, and 33,468 agreed to participate, resulting in a CCHS household-level response rate of 80.6%. In each responding household, one person was selected to participate in the survey. Responses were obtained for 29,858 individuals, resulting in a CCHS person-level response rate of 89.2%. Among these respondents, 6,520 were eligible for the IFT Component and 5,617 completed it, for an IFT person-level response rate of 86.2%. Multiplying the CCHS household-level response rate, the CCHS person-level response rate and the IFT person-level response rate yields an estimated IFT Component response rate of 62.0%.¹¹

This study pertains to couples who had a baby while together, reported a pregnancy in the past 12 months, or responded “yes” to the question, “In the time that you and your partner have been together, have you ever tried to become pregnant?” These couples were considered to have attempted pregnancy at some point in their relationship and comprised 4,297 respondents. The analysis was limited to couples in which the woman was aged 18 to 44 at the time of interview, resulting in 3,656 respondents in the study population.

Measures

The socio-demographic characteristics examined in this study were the age group of the woman (18 to 24, 25 to 29, 30 to 34, 35 to 39, or 40 to 44) and the man (18 to 24, 25 to 29, 30 to 34, 35 to 39, 40 to 44, or 45 or older), the woman’s highest level of education (less than secondary, secondary graduation, or postsecondary graduation), the couple’s

marital status (married or common-law), their parity (zero or at least one child), and their household income. To examine the potential interaction between parity and the woman’s age group, a composite measure was derived (parity 0, age 18 to 34; parity 0, age 35 to 44; parity 1+, age 18 to 34; and parity 1+, age 35 to 44). Household income quartiles (\$28,250 or less; more than \$28,250 to \$42,400; more than \$42,400 to \$60,850; and more than \$60,850) were derived using a modified version of the equivalence score method, which adjusts household income by household size.¹² This method uses a weight factor based on the “40/30” rule. For each respondent in the study population, a household weight factor was calculated based on the number of people in the household. The first household member was assigned a weight of 1; the second member, a weight of 0.4; and the third and all subsequent members, a weight of 0.3. The household weight factor was calculated as the sum of these weights. For example, the weight factor for a four-member household would be 2.0 (1 + 0.4 + 0.3 + 0.3). Household income was divided by the household weight factor to derive income adjusted for household size. The adjusted household incomes were grouped into quartiles (four groups, each containing one-fourth of the study population).

Definitions

Sought medical help. Couples were categorized as having sought medical help to become pregnant if they responded “yes” to the question, “In the time that you have been together, have you had any problems in conceiving a child and seen a doctor or other medical care provider about this?”

Age when most recent medical help was received. Respondents were asked the year in which they received their most recent medical help to become pregnant. This information and age at interview were used to calculate the partners’ ages when they most recently received medical help.

Methods used to become pregnant. Respondents who sought help were asked, “While you were trying to become pregnant, did you use any of the following . . . ?” and were read a list of methods: techniques to track menstrual cycle and ovulation; fertility-enhancing drugs prescribed by a doctor; assisted reproductive techniques (ART); and other medical treatment.

Mutually exclusive categories of methods used were derived hierarchically. The categories were: ART (including other methods if reported); fertility-enhancing drugs (excluding ART); other medical treatment (excluding ART and fertility-enhancing drugs); and tracking menstrual cycle and ovulation only.

Analytical techniques

Because the variables of interest were attributes of the couple (seeking medical help, methods used to become pregnant, etc.), analyses were weighted with the couple-level survey weight rather than the person-level weight. The couple-level weight ensured that estimates were representative of the number of couples in Canada in 2009/2010 rather than the number of individuals.¹¹ The data were analyzed with SAS¹³ and SUDAAN¹⁴ software. Percentages, means and confidence intervals were calculated. Two separate logistic regression models were run to estimate the association between the study population’s socio-demographic characteristics and seeking medical help for problems conceiving. Model 1 included age group of the woman and parity as separate variables, while Model 2 included the composite measure of age group of the woman and parity. Risk ratios were estimated to compare help seeking between groups in the study population, when controlling for differences in their covariate distributions.¹⁵ Variance estimation (95% confidence intervals) and significance testing (t-test or Wald F-statistic) of differences between estimates were done using the replicate weights to account for the survey’s complex sampling design. Statistical significance was set at $p < 0.05$,

but was Bonferroni-adjusted depending on the number of comparisons.¹⁶

Results

According to data from the Infertility Component of the 2009/2010 CCHS, 77% of opposite-sex couples in Canada with a female partner aged 18 to 44 had tried to become pregnant at some point in their relationship. Among these couples, slightly more than half (55%) of the women were aged 35 to 44, and 68% of the men were older than 35 (Table 1). About 81% of these couples were married; 89% had at least one child; and 73% of the women had a postsecondary degree or diploma.

Sought medical help

Approximately 15% of these couples (around 380,000 couples) reported seeking medical help to assist conception. Couples in which the woman was aged 35 to 44 were more likely to have sought such help than were couples in which the woman was aged 25 to 29 (Figure 1). Childless couples were more likely to have sought help than were couples with at least one child. Among childless couples, those in which the woman was aged 35 to 44 were twice as likely to have sought help (63%) as were those in which the woman was younger than 35 (30%). The highest level of female educational attainment was associated with an increased prevalence of seeking medical help, compared with the lowest

level of education. Couples in the highest household income quartile had the highest prevalence of help-seeking of all income groups.

Even when controlling for other socio-demographic characteristics (excluding the man's age group) in two multivariable logistic regression models, associations between the woman's age, parity and marital status and having sought medical help to become pregnant persisted (Table 2). In Model 1, which includes the woman's age group and parity as separate variables, couples in which the woman was aged 30 to 44 were two to three times more likely to have sought help than were couples in which the woman was aged 25 to 29. Childless couples were four to five times more likely to have sought help than were couples with at least one child. Married couples were more likely to have sought help than were common-law couples. The woman's education and the couple's household income were not associated with help-seeking.

In Model 2, which includes the composite measure of parity and age group of the woman, marital status was significantly associated with seeking medical help to achieve pregnancy. Compared with couples with at least one child and in which the woman was younger than 35, childless couples, regardless of the woman's age, were significantly more likely to have sought help, as were couples with at least one child but in which the woman was aged 35 to 44. As in Model 1, the woman's education and the couple's household income were not associated with help-seeking.

Table 1
Percentage distribution of socio-demographic characteristics of opposite-sex couples who ever attempted pregnancy, Canada excluding territories, 2009/2010

Characteristics	%	95% confidence interval	
		from	to
Age group of female partner			
18 to 24	5.2	4.5	6.0
25 to 29	14.9	13.9	16.1
30 to 34	25.0	24.0	26.1
35 to 39	27.1	26.0	28.2
40 to 44	27.7	25.9	29.7
Age group of male partner			
18 to 24	1.9	1.5	2.6
25 to 29	10.0	8.8	11.2
30 to 34	20.3	18.8	21.9
35 to 39	24.7	23.2	26.3
40 to 44	25.1	23.1	27.3
45 or older	17.9	16.0	20.0
Marital status			
Common-law	19.2	17.6	21.0
Married	80.8	79.0	82.4
Parity			
No children	11.5	10.1	13.0
One or more children	88.5	87.0	89.9
Parity, age group of female partner			
0, 18 to 34	8.1	6.9	9.4
0, 35 to 44	3.4	2.8	4.2
1+, 18 to 34	37.1	35.4	38.9
1+, 35 to 44	51.4	49.7	53.1
Highest level of education of female partner			
Less than secondary graduation	5.7	4.6	6.9
Secondary graduation	21.3	19.4	23.3
Postsecondary graduation	73.1	70.9	75.1

Source: 2009/2010 Canadian Community Health Survey, Infertility Component.

Methods used

Among couples who had ever sought help for conception, 68% reported tracking the menstrual cycle and ovulation; 42% reported fertility-enhancing drugs; 19% reported assisted reproductive techniques (ART); and 29% reported "other" medical treatment. (Because couples could report more than one method, the percentages add to over 100%.)

Most (61%) couples who sought medical help reported using only

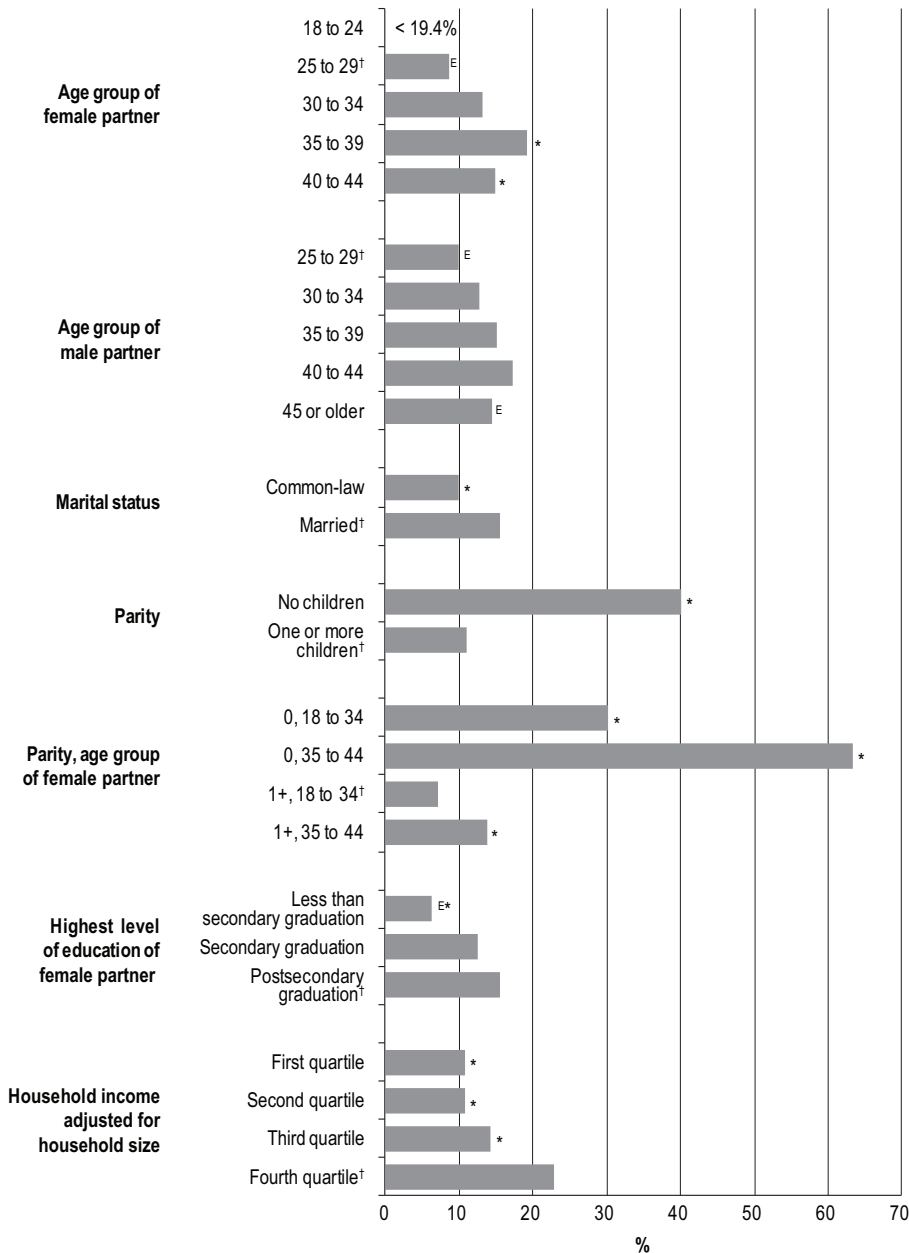
one method. Tracking ovulation was reported most frequently (50%), followed by “other” medical treatment (24%), and fertility-enhancing drugs (20%). Because of extreme sampling

variability, the point estimate for ART cannot be reported; however, the upper 95% confidence interval indicated that the percentage likely fell below 14%.

More than one method was used by 39% of couples. Those who reported ART or fertility-enhancing drugs were more likely to report at least one additional method (83% and 71%, respectively) than were those who reported “other” medical treatment (48%) or tracking ovulation (55%).

The age at which couples last received medical help for conception varied by the methods they used. Among couples who reported ART, the women were, on average, 34, and the men, 37 (Figure 2). Couples who did not use ART but reported one of the other mutually exclusive method categories were younger when they had last received help: 29, on average, for the women, and 32 for the men.

Figure 1
Prevalence of seeking medical help because of problems conceiving among opposite-sex couples who ever attempted pregnancy, by selected characteristics, Canada excluding territories, 2009/2010



† reference category

* significantly different from reference category ($p < 0.05$, adjusted for number of comparisons)

E use with caution

Note: The age group 18 to 24 was excluded from age group of male partner because of small sample sizes. Linear education trend and linear household income trend were statistically significant ($p < 0.001$). If the coefficient of variation of an estimate exceeds 33.3%, that estimate is indicated as being less than the upper limit of the 95% confidence interval.

Source: 2009/2010 Canadian Community Health Survey, Infertility Component.

Discussion

In 2009/2010, slightly more than three in four couples in Canada with a female partner aged 18 to 44 reported having tried to become pregnant at some point in their relationship. Of these, 15% (about 380,000 couples) reported seeking medical help for conception, a percentage very similar to what has been reported for Australia and the United Kingdom (14% to 16%).¹⁷⁻¹⁹

The characteristics of couples who sought medical help differed from those of couples who did not, notably, age group of the woman, parity, and marital status.

Couples in which the woman was aged 30 to 44 were more likely to seek help than were couples in which the woman was younger. This is certainly intuitive, given that older age, particularly beyond 35, is strongly associated with decreased rates of spontaneous conception and increased rates of pregnancy loss.²⁰⁻²³

While parity was associated with help-seeking regardless of the woman's age group, the *strength* of the association increased with age. Compared with couples with at least one child and in which the woman was aged 18 to 34, the likelihood of seeking help was almost four times greater among childless couples in which the woman was aged 18 to 34, and eight times greater among

Table 2
Adjusted risk ratios of seeking medical help because of problems conceiving among opposite-sex couples who ever attempted pregnancy, by selected characteristics, Canada excluding territories, 2009/2010

Characteristics	Model 1			Model 2		
	Risk ratio	95% confidence interval		Risk ratio	95% confidence interval	
		from	to		from	to
Age group of female partner						
18 to 24	1.06	0.47	2.38	...	...	...
25 to 29†	1.00	1.00	1.00	...	...	...
30 to 34	1.94*	1.12	3.37	...	...	...
35 to 39	3.37*	1.96	5.80	...	...	...
40 to 44	2.73*	1.46	5.13	...	...	...
Marital status						
Common-law	0.66*	0.47	0.92	0.62*	0.44	0.87
Married†	1.00	1.00	1.00	1.00	1.00	1.00
Parity						
No children	4.71*	3.66	6.05	...	...	...
One or more children†	1.00	1.00	1.00	...	...	...
Parity, age group of female partner						
0, 18 to 34	...	...	...	3.81*	2.67	5.41
0, 35 to 44	...	...	...	8.21*	5.84	11.52
1+, 18 to 34†	...	...	...	1.00	1.00	1.00
1+, 35 to 44	...	...	...	1.67*	1.25	2.24
Highest level of education of female partner						
Less than secondary graduation	0.63	0.34	1.15	0.59	0.31	1.10
Secondary graduation	1.08	0.72	1.63	1.05	0.70	1.58
Postsecondary graduation†	1.00	1.00	1.00	1.00	1.00	1.00
Household income adjusted for household size‡						
First quartile	0.72	0.42	1.21	0.68	0.41	1.15
Second quartile	0.65	0.40	1.03	0.63	0.40	1.01
Third quartile	0.72	0.48	1.10	0.70	0.46	1.07
Fourth quartile†	1.00	1.00	1.00	1.00	1.00	1.00

† reference category

‡ adjusted using 40/30 formula; those who did not provide a response (343) were grouped into a "missing" category, which was not significant and is not shown.

* significantly different from reference category ($p < 0.05$)

... not applicable

Note: A risk ratio greater than 1.0 indicates a greater risk of seeking medical help because of problems conceiving.

Source: 2009/2010 Canadian Community Health Survey, Infertility Component.

childless couples in which the woman was aged 35 to 44.

A growing number of couples in Canada are delaying childbirth. Since 1984, the percentage of first-born children whose mother is 35 or older has tripled to 11%.²⁴ Recent data suggest that many people may be unaware of the risks to fertility and childbearing associated with older female age,^{25,26} or may trust that ART will allow them to bear a child regardless of age.^{27,28}

Married couples were more likely than common-law couples to seek help to become pregnant. Because marriage is often a trigger for childbearing,²⁹ married

couples may be more likely to monitor conception and thereby recognize signs of subfecundity and seek help.³⁰

The association between higher education of the woman and couples' help-seeking did not persist when other characteristics were taken into account. While a similar result was reported in a recent study of women in the United Kingdom,³¹ a 2008 analysis of the National Survey of Family Growth in the United States found that being a college graduate was associated with an increased likelihood of seeking medical help to conceive.³² These inconsistent results suggest that more research is needed to

What is already known on this subject?

- Demand for medical therapies to help conception is growing in a number of countries, including Canada.
- Data about the use of methods to improve the chance of conception, such as assistive reproductive techniques (ART) and fertility-enhancing drugs, are limited.
- In Canada, an increasing number of couples are delaying childbirth.

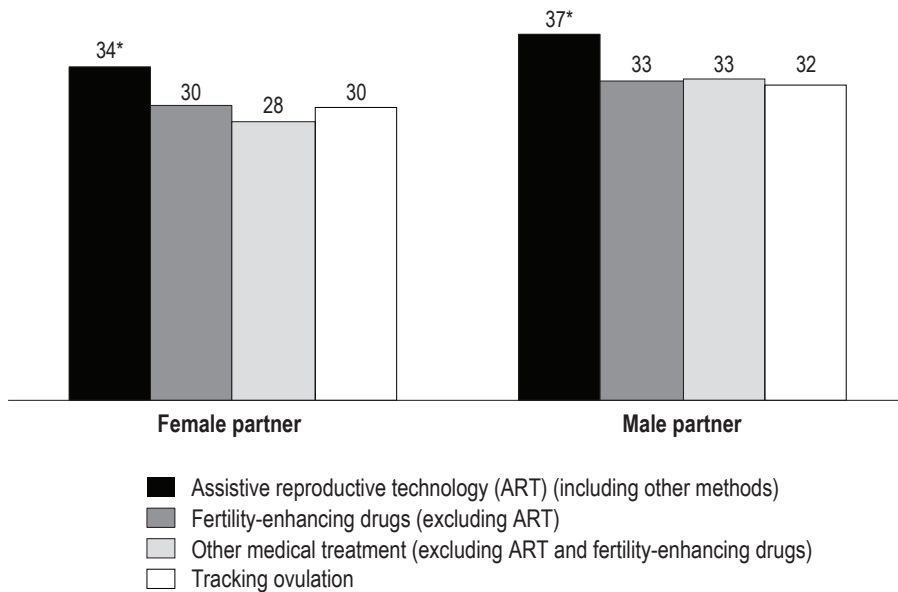
What does this study add?

- The 2009/2010 Canadian Community Health Survey is the first national population-based survey to ask about ART use.
- In 2009/2010, slightly more than three in four couples with a female partner aged 18 to 44 reported having tried to become pregnant at some point during their relationship; of these, 15% reported seeking medical help for conception.
- Most (61%) couples who sought medical help reported using only one method.
- Those who reported using ART or fertility-enhancing drugs were more likely to report at least one additional method than were those who reported "other" medical treatment or tracking ovulation.

understand the role of education in help seeking.

Seeking medical help was most common among couples in the highest income quartile, but as with education, the association did not persist when other characteristics were taken into account. This may reflect the type of help sought and access to primary health care in Canada. Other studies have found an association between income and seeking medical help in the United States where primary care involves fees.^{32,33} By

Figure 2
Average age of female and male partner when most recent medical help was received, by mutually exclusive category of method used to try to achieve pregnancy, Canada excluding territories, 2009/2010



* significantly different from other categories within gender grouping ($p < 0.05$)

Source: 2009/2010 Canadian Community Health Survey, Infertility Component.

contrast, couples in Canada do not pay for non-specialized primary care services related to reproductive health.

About 20% of Canadian couples who sought medical help for problems conceiving used ART. Because the 2009/2010 CCHS is the first national population-based survey to ask about ART, whether this is an increase from previous periods is not known. However, the steady increase over the past 10 years in the number of ART cycles reported in the CARTR database suggests that ART use may continue to grow, particularly if provinces begin to provide coverage for the cost of treatments, as is now the case in Quebec.³⁴

Users of ART and fertility-enhancing drugs often reported another method as well. While the order in which couples tried each method was not known, it could be that they used ART and fertility-enhancing drugs after methods such as tracking the menstrual cycle and ovulation were unsuccessful. Couples who used ART were, on average, older when they

last received medical help than were couples who reported other methods. This suggests that ART represents the “top-step-of-the-staircase” approach to treatment, in which identification and correction of all fertility factors occur first, followed by increasingly invasive procedures.³⁵

Limitations

This study has a number of limitations. Because couples were asked if they *ever* had problems conceiving that had led them to consult a medical care provider, it was not possible to examine associations between problems conceiving and *current* measures of health and lifestyle. Many factors contribute to sub-fertility, including irregular ovulation,³⁶ obesity,³⁷ smoking,³⁸ and a history of gynecologic problems³⁵ among women, and sperm abnormalities³⁶ among men. Impaired thyroid function,^{39,40} exposure to environmental pollutants such as phthalates, bisphenol A and heavy metals,⁴¹ and a history of sexually

transmitted infections⁴²⁻⁴⁴ are risk factors for infertility in both sexes. These could not be examined in this study.

Because of small sample sizes, the main effects of age of the woman, parity, and the interaction between them could not be estimated in the same model. Nonetheless, the two models indicate a significant interaction between female age and parity.

Of the various methods used to become pregnant, ART and “other” medical treatment were not explicitly defined, so the exact type of ART and/or medical treatment was unknown. Similarly, because couples were not asked about the frequency and timing of their use of each method, a complete history could not be established. Sample sizes were too small to examine how the use of the various methods differed by the characteristics of the couples. Finally, it was not possible to determine if the methods used resulted in a pregnancy or birth, as these questions were not asked on the survey.

Conclusion

About one in seven couples who attempted pregnancy sought medical help for conception. These couples share certain characteristics including being married, being childless, and having a female partner aged 35 or older. Among couples seeking help, about two in five reported using fertility-enhancing drugs and one in five reported using ART. Given the trend toward delayed childbearing and the presence of risk factors for infertility, the demand for medical help to conceive may be even greater in the future. ■

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