Update on the comparison of assisted reproduction outcomes between Europe and the USA: the 2002 data

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Objective: In follow-up to an earlier study of in vitro fertilization (IVF) outcomes in Europe and the U.S. for the year 2001, the present study reports on 2002 outcomes in an attempt to determine diverging practice trends.
Design: Retrospective cohort comparisons.
Setting: Academically affiliated private fertility center.
Patient(s): This study involved overall 324,238 IVF cycles in Europe and 115,538 cycles in the U.S.
Main Outcome Measure(s): Pregnancy and delivery rates for fresh IVF cycles, frozen-thawed cycles, and oocyte donation cycles.
Result(s): This study confirms continuing pregnancy outcome differences in all aspects of assisted reproduction to the benefit of the U.S., a much higher use of IVF procedures in Europe, and larger embryo transfer numbers and multiple pregnancy rates in the U.S., although both continents demonstrate an almost identical trend toward fewer embryos and lower multiple pregnancy rates.
Conclusion(s): Universally lower pregnancy rates in Europe remain of concern, especially because the trend between 2001 and 2002 suggests a possible further widening of the gap. Initiatives that may further reduce European pregnancy rates, such as increasing emphasis on single-embryo transfers and legislative interventions, should therefore be introduced with caution. (Fertil Steril® 2007;87:1301–5. ©2007 by American Society for Reproductive Medicine.)

Key Words: In vitro fertilization (IVF), assisted reproductive technologies (ART), multiple births, cost effectiveness, utilization, oocyte donation

We recently reported a formal comparison of assisted reproduction technology (ART) outcomes between Europe and the U.S., which was based on 2001 data, the first year that European data had become available for such a comparison (1). This analysis revealed considerable differences in outcomes between the continents and raised serious questions about the causes for these discrepancies. Since then, 2002 outcome data have been published by the European Society for Human Reproduction and Embryology (ESHRE) (2) and the U.S. Department of Health and Human Services (DHHS) (3). The present study presents a formal comparison of these 2002 data in an attempt to determine whether, even within such a brief time span, divergent trends, suggestive of changes in practice patterns, can be detected on either side of the Atlantic.

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MATERIALS AND METHODS

The present study relied on the same two databases previously analyzed in our initial report (1): the annual ESHRE and DHHS reports (2, 3). The DHHS data for the year 2002 were reported in December 2004, and the ESHRE data became available in mid-2006. As previously noted (1), the reporting styles of both reports unfortunately differ greatly and therefore do not always allow for direct comparisons of data. Where such a comparison is not possible, or where adjustments to reported data appeared indicated, this is noted in the text in detail.

The ESHRE and DHHS reports are based on cycle outcomes and are not based on individual patients. They therefore present, at times, repetitive experiences for the same patients, lack statistical independence, and have to be interpreted with caution.

The SPSS for Windows program, standard version 10.0.7 (SPSS, Chicago, IL) was used for statistical analyses. A

TABLE 1

General characteristics for year 2002.

	Europe	Change from 2001 (%)	U.S.	Change from 2001 (%)	*P* value
Countries, n	25	+2 (8.7)	1	—	
Clinics, n[a]	631	+52 (9.0)	391	+7 (1.8)	<.0001
Total ART					
Cycles (n)[b]	324,238	+34,548 (11.9)	115,538	+7,951 (7.4)	<.0001
Fresh	257,682	+81,530 (46.3)	85,826	+4,962 (6.1)	<.0001
Frozen	57,162	+15,579 (37.5)	20,305	+7,605 (60.0)	<.0001
Donation	7,677	+1,097 (16.7)	9,261	+2,208 (31.3)	<.0001

[a] Neither in Europe nor in the U.S. did all ART clinics report. In Europe, the ESHRE data also does not include all ESHRE member countries. In the U.S., 391 out of 428 existing clinics (91.4%) reported.

[b] Includes fresh IVF cycles, with and without ICSI (fresh), fresh oocyte donation cycles (donation), frozen-thawed cycles, including frozen-thawed donation cycles (frozen), as well as PGD and experimental treatment cycles.

Gleicher. ART outcomes in Europe and the USA. Fertil Steril 2007.

statistical difference was considered significant at a *P* value of <.05. Institutional Review Board approval for this study was not required, because it involved the re-evaluation of previously published data.

RESULTS

The European experience represented 25 countries and 631 reporting clinics. The U.S. experience included 391 reporting clinics. In other words, 61.4% more clinics reported in Europe than in the U.S., with Europe demonstrating a 9% and the U.S. only an 1.8% increase in reporting facilities between 2001 and 2002 (*P*<.0001) (Table 1).

Europe reported a total of 324,238 ART cycles of all kinds, representing an increase over the preceding year of 34,548 cycles (11.9%). The U.S. reported 115,538 ART cycles, an increase of 7,951 cycles (7.4%) (*P*<.0001). The 2.7-fold greater use of ART procedures in Europe than in the U.S. (in 2001) thus increased to a 2.8-fold greater use.

Europe conducted 257,682 fresh in vitro fertilization (IVF) cycles, including cycles involving intracytoplasmic sperm injection (ICSI), up a significant 81,530 cycles from 2001 (46.3%). In contrast, fresh nondonor IVF cycles in the U.S. increased only by 4,962 (6.1%) (*P*<.0001). This comparison should, however, be viewed with a degree of caution, because in the European data the number of initiated cycles was not known for some of the largest contributing countries (Belgium, France, and Iceland) and oocyte retrieval numbers, rather than cycle starts, were included in the European data for these countries.

The number of European frozen-thawed cycle starts had not been reported in 2001, and we therefore, in our earlier publication, had reported European embryo transfer numbers only (1). The ESHRE 2002 data report thawings, although intermingled with these data are embryo transfers from The Netherlands, which did not report on cycle starts. Therefore, this European data set also has to be viewed with caution. If all of these shortcomings are ignored, Europe reports 57,162 frozen-thawed cycles, an increase from 2001 of 15,579 (37.5%). The U.S., in contrast, reports 20,305 frozen-thawed cycles (including oocyte donation cycles), a very significant increase of 7,605 (60%) (*P*<.0001) compared with Europe.

Egg donation cycles increased by 1,097 cycles in Europe (16.7%) to 7,677 and by 2,208 cycles (31.3%) in the U.S. to a total of 9,261 cycles (*P*<.0001). More experimental groupings, such as cycles undergoing preimplantation genetic diagnosis or in vitro oocyte maturation in the European experience and called "newly established techniques" in the U.S. data, are not comparable and, because of their small numbers and limited relevance, will not be discussed here.

Some aspects of age distributions of women undergoing IVF cycles can be compared. The European data demonstrate that the under age 35 group of patients represented 51.7% of fresh IVF cycles and 47.7% of fresh cycles that used ICSI.. The same age group in the U.S. experienced 37,591 IVF cycles, representing 43.8% of fresh IVF cycles. As we already suggested in reference to the 2001 data, U.S. patients appear, therefore, as somewhat older than European women undergoing fresh IVF cycles (1).

Unfortunately, Europe and the U.S. report all other age cut−offs differently, preventing further comparisons.

Table 2, however, presents a comparison of the numbers of embryos transfered. As can be seen, both Europe and the U.S. are moving toward smaller embryo transfer numbers in that both demonstrate increasing percentages of single- and two-embryo transfers and decreasing higher embryo transfer numbers. Indeed, if the rates of increase in single- and two-embryo transfers, and the decrease of higher-order transfers were combined, Europe and the U.S. experienced an almost identical percentage switch toward lower embryo numbers.