International Committee for Monitoring Assisted Reproductive Technologies: World Report on Assisted Reproductive Technologies, 2007

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Objective: To analyze information on assisted reproductive technology (ART) performed worldwide, and trends in outcomes over successive years.
Design: Cross-sectional survey on access, efficiency, and safety of ART procedures performed in 55 countries during 2007.
Setting: Not applicable.
Patient(s): Infertile women and men undergoing ART globally.
Intervention(s): Collection and analysis of international ART data.
Main Outcome Measure(s): Number of cycles performed, by country and region, including pregnancies, single and multiple birth rates, and perinatal mortality.
Result(s): Overall, >1,251,881 procedures with ART were reported, and resulted in 229,442 reported babies born. The availability of ART varied by country, from 12 to 4,140 treatments per million population. Of all aspiration cycles, 65.2% (400,617 of 614,540) were intracytoplasmic sperm injection. The overall delivery rate per fresh aspiration was 20.3%, and for frozen-embryo transfer (FET), 18.4%, with a cumulative delivery rate of 25.8%. With wide regional variations, single-embryo transfer represented 23.4% of fresh transfers, and the proportion of deliveries with twins and triplets from fresh transfers was 22.3% and 1.2%, respectively. The perinatal mortality rate was 19.9 per 1,000 births for fresh in vitro fertilization using intracytoplasmic sperm injection, and 9.6 per 1,000 for FET. The proportion of women aged ≥40 years increased to 19.8% from 15.5% in 2006.

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Conclusion(s): The international trend toward <3 transferred embryos continued, as did the wider uptake of FET. This was achieved without compromising delivery rates. The application of ART for women aged >40 years was a major component of ART services in some regions and countries. (Fertil Steril® 2015;103:402–13. ©2015 by American Society for Reproductive Medicine.)
Key Words: ART, assisted reproductive technologies, registry, outcomes, multiple births, frozen embryo transfer, single embryo transfer

This is the 13th world report on assisted reproductive technology (ART), and the 8th produced by the International Committee for Monitoring Assisted Reproductive Technologies (ICMART) (1–6). Similar reports have been previously published since 1989 by the International Working Group on Assisted Reproduction, later renamed ICMART (7–11). This report provides international information on availability, effectiveness, and perinatal outcomes of ART treatment cycles performed during 2007, for babies born up to 2008, as well as describing ART practices internationally.

MATERIALS AND METHODS

The data corresponding to ART treatment cycles performed during 2007 were collected from national or regional ART registries as previously described in ICMART world ART reports (1–6). In a few countries with no national or regional registries, data were supplied directly from individual clinics. No individual patient data were submitted, and only aggregated national data were reported to ICMART. The authors of this article have no conflicts of interest pertaining to this article. Institutional review board approval was not obtained by ICMART because adequate approvals were obtained in individual countries.

The ICMART data collection process makes use of forms that are provided in the ICMART tool box for ART data collection, available at www.icmartivf.org. The forms contain information regarding the organization of each country's register, the practice of ART, and the results of in vitro fertilization (IVF), intracytoplasmic sperm injection (ICSI), and frozen embryo transfer (FET), and include initiated cycles, follicular aspirations, ETs, clinical pregnancies, deliveries, and newborns. Whenever available, these data are further stratified according to fertilization technique, woman's age, number of embryos transferred, and gestational age at delivery. Other forms describe preimplantation genetic diagnosis (PGD), preimplantation genetic screening, oocyte donation (OD), complications for women, and congenital anomalies detected during the perinatal period. Information is also provided on women giving birth (deliveries) after intrauterine insemination (IUI), including with husband/partner sperm (IUI-H), and with donor sperm (IUI-D).

The 2009 ICMART-World Health Organization (WHO) ART glossary was used as the reference for terminology (12, 13). The present report covers ART cycles performed during the year 2007 and is based on aggregated country data which, after collection, were transferred to the Uppsala Clinical Research Center, Uppsala University, Uppsala, Sweden, where data were checked for consistency, and a statistical report was generated. Software from SAS (version 9.3, SAS Institute, Inc.) was used for data management and to create tables. Graphs were obtained using R (version 2.14.1).

RESULTS

The results are presented in Tables 1–4. Additional results are provided in Supplemental Tables 1–13 (available online) and Supplemental Figures 1–11 (available online).

Availability

Data were received from 2,419 of 3,354 (72.1%) known ART clinics in 55 countries in 2007. These figures include 67 more clinics and 1 less country than the previous report for 2006 (6). Europe had the largest number of reporting clinics, at 1,032 (42.7%), followed by Asia with 791 (32.7%) and North America with 384 (15.9%). At a country level, the single highest number of participating clinics was reported from Japan as 603 (24.9%). Clinics reporting <100 cycles were located mostly in 4 countries, i.e., India (81.6% of total clinics), South Korea (54.1%), Japan (50.6%), and Italy (44.1%). Countries with 10% of their clinics performing >1,000 cycles per year were the Netherlands (61.5%), Belgium (61.1%), Australia and New Zealand (42.9%), and Sweden (37.5%). Twenty-eight of 55 (50.9%) countries were able to provide data on 100% of the clinics in their country (Supplemental Table 1).

Table 1 shows an estimated >1,251,881 cycles from participating clinics, representing a 19.2% increase in cycles compared with 2006. The availability of ART exhibited a wide range, from 6 cycles per million inhabitants in Guatemala, to 4,140 per million inhabitants in Israel. Japan reported the largest number of aspirations (111,187), followed by the United States (79,081) and France (51,846). The proportion of FETs increased in 2007 in many countries. More than 10,000 ET cycles were conducted with frozen-thawed embryos in Japan (43,552), the United States (20,166), Australia (16,753), Germany (16,391), and France (14,772) (Supplemental Table 2). Fertilization using ICSI represented 65.2% of all aspirations globally; however, it varied very widely from 49.1% in Asia to 97.8% in the Middle East.

Effectiveness

Table 2 reports on the outcomes of ART procedures. Pregnancy rates (PRs) and delivery rates (DRs) per aspiration were similar in IVF and ICSI, with PR at 27.8% vs. 29.0%,

TABLE 1

Reported data and estimations (bold) for the year 2007.

	Fresh IVF and ICSI						FET				
Country name	Aspirations	PR/Asp (%)	DR/Asp (%)	DR/ Aspcumul. (%)	Babies/Asp fresh (%)[a]	Babies/ Aspcumul. (%)[a]	Babies/ FET (%)[a]	Estimated or reported overall total number of cycles[b]	Availability cycles/million[c]	Total babies reported from participating clinics[d,e]	Total babies estimated from all clinics[e,f]
India	14,903	35.5	NA	NA	38.6	42.0	25.9	**88,798**	**79**	7,255	**31,820**
Japan	111,130	13.6	8.3	16.0	9.3	17.6	21.3	**16,0556**	**1,260**	19,613	**19,711**
South Korea	21,065	31.4	**23.1**	**27.7**	NA	NA	11.3	**51,335**	**1,047**	33	**62**
Australia	**28,087**	**25.1**	**19.8**	**30.1**	**22.0**	**33.5**	19.2	**50,770**	**2,485**	9,851	9,851
New Zealand	**2,615**	**32.8**	**26.0**	**38.5**	**28.1**	**41.5**	26.0	**4,525**	**1,099**	1,152	1,152
Albania	143	38.5	31.5	31.5	38.5	38.5	NA	**483**	**134**	64	**192**
Austria	**5,842**	**29.8**	**21.9**	**23.0**	NA	NA	NA	5,528	674	**1,684**	**1,684**
Belgium	16,209	28.7	21.0	26.2	23.5	29.8	19.2	**25,054**	**2,411**	4,991	4,991
Bosnia and Herzegovina	142	21.8	12.7	12.7	13.4	13.4	NA	**405**	**89**	19	**48**
Bulgaria	1,207	32.6	25.7	26.3	30.3	31.0	11.4	**2,934**	**401**	378	**810**
Cyprus	1,249	39.8	**29.2**	**31.2**	NA	NA	NA	**2,066**	**2,620**	**489**	**685**
Czech Republic	**10,909**	**32.1**	**24.9**	**30.9**	NA	NA	NA	**16,381**	**1,601**	**4,361**	**4,361**
Denmark	10,771	26.0	21.3	24.7	24.9	28.8	17.9	13,956	2,552	3,156	3,156
Finland	4,589	27.5	21.3	33.5	23.8	37.2	20.1	8,719	1,664	1,815	1,815
France	51,846	25.4	20.0	23.7	23.9	28.1	14.5	**72,326**	**1,135**	14,710	14,710
Germany	43,119	28.5	16.1	20.1	19.7	26.1	16.7	62,322	756	11,236	11,236
Greece	2,075	34.3	25.1	26.4	32.0	33.5	18.0	**10,788**	**1,008**	769	**3,247**
Hungary	2,331	28.0	22.5	26.0	28.5	34.4	23.3	**6,202**	**623**	816	**1,632**
Iceland	389	26.5	22.4	35.2	26.2	40.6	23.0	**701**	**2,322**	168	168
Ireland	2,440	31.9	27.0	31.4	34.0	39.2	20.4	**4,156**	**1,011**	958	**1,118**
Italy	35,645	22.0	14.5	14.6	18.3	18.5	12.3	40,714	700	6,591	6,591
Latvia	179	36.9	**27.4**	**30.2**	NA	NA	NA	**1,404**	**621**	5	**20**
Lithuania	**451**	**25.3**	**18.6**	**19.3**	NA	NA	NA	**534**	**149**	**109**	**109**
Macedonia	952	29.7	22.7	23.3	29.3	30.1	30.8	1,008	490	287	287
Montenegro	270	22.6	20.4	20.4	24.4	24.4	NA	278	406	66	66
Netherlands	15,058	29.5	22.6	26.7	NA	NA	NA	19,998	1,207	**5,050**	**5,050**
Norway	5,388	28.8	24.6	31.3	28.1	NA	NA	7,849	1,696	**2,119**	**2,119**
Poland	4,767	35.3	29.0	36.5	35.2	44.5	20.2	**16,586**	**431**	2,201	**4,920**
Portugal	4,021	28.8	21.5	23.0	26.5	28.3	19.1	5,213	490	1,187	1,187
Russia	21,173	34.3	22.5	24.7	27.6	30.8	23.3	**33,368**	**236**	7,047	**8,841**
Serbia	1,074	28.5	22.3	22.3	25.7	25.7	NA	**2,252**	**222**	277	**554**
Slovenia	2,776	30.2	24.3	26.9	29.9	32.9	17.3	3,426	1,705	917	917
Spain	30,946	33.7	19.4	22.9	24.9	31.2	28.5	**88,957**	**2,199**	13,302	**21,810**
Sweden	9,511	30.3	23.6	31.8	24.8	33.6	21.3	15,003	1,661	3,271	3,271
Switzerland	4,121	27.6	20.3	30.4	24.1	35.6	15.7	**8,128**	**1,076**	1,467	**1,526**
Turkey	35,386	36.5	NA	NA	14.9	14.9	NA	**37,997**	**534**	5,262	5,262
Ukraine	3,818	38.8	30.4	33.8	38.9	43.3	30.4	**8,017**	**173**	1,819	**2,977**
United Kingdom	33,559	30.6	27.0	31.6	33.8	39.3	23.4	46,544	766	13,869	13,869

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TABLE 1

Continued.

	Fresh IVF and ICSI						FET				
Country name	Aspirations	PR/Asp (%)	DR/Asp (%)	DR/ Aspcumul. (%)	Babies/Asp fresh (%)[a]	Babies/ Aspcumul. (%)[a]	Babies/ FET (%)[a]	Estimated or reported overall total number of cycles[b]	Availability cycles/million[c]	Total babies reported from participating clinics[d,e]	Total babies estimated from all clinics[e,f]
Argentina	5,072	26.9	21.4	24.3	26.3	29.4	15.7	**17,334**	**430**	1,973	**4,228**
Bolivia	64	28.1	28.1	29.7	34.4	34.4	0.0	**300**	**33**	22	**66**
Brazil	11,070	31.8	23.8	26.3	33.5	36.5	22.9	**26,768**	**141**	4,470	**7,982**
Chile	1,195	35.2	27.7	30.6	38.4	41.8	17.0	**2,170**	**133**	541	**696**
Colombia	1,048	30.3	24.9	27.3	29.4	31.9	23.2	**2,209**	**50**	441	**617**
Ecuador	190	36.8	30.0	31.6	36.8	38.4	8.3	**581**	**42**	108	**189**
Guatemala	51	43.1	33.3	33.3	43.1	43.1	0.0	**158**	**12**	37	**74**
Mexico	3,313	29.7	23.1	25.1	28.9	31.3	24.4	**16,231**	**149**	1,483	**4,833**
Peru	726	31.3	20.8	23.6	30.7	33.9	33.8	**4,072**	**142**	534	**1,424**
Uruguay	223	29.6	25.1	29.6	30.0	34.5	25.0	**536**	**155**	95	**143**
Venezuela	728	33.2	25.1	29.0	33.0	37.2	30.7	**1,715**	**66**	392	**523**
Egypt	9,631	33.5	23.9	25.6	35.2	40.2	32.1	**39,023**	**486**	3,875	**12,917**
Lebanon	769	28.3	16.1	16.1	21.6	21.6	0.0	NA	NA	223	NA
Saudi Arabia	298	44.0	29.2	29.9	40.6	41.3	6.7	NA	NA	123	NA
Israel	**20,586**	**26.3**	**19.4**	**24.3**	NA	NA	NA	26,608	4,140	**6,267**	**6,267**
Canada	8,501	38.4	31.1	38.0	40.7	49.4	24.7	13,117	393	4,469	4,469
United States	79,038	41.0	33.3	41.1	44.2	54.0	38.3	**175,778**	**584**	56,025	**75,587**
Region											
Asia	147,098	18.4	10.7	17.8	12.8	20.5	20.5	300,689	230	26,901	51,593
Australia and New Zealand	30,702	25.8	20.4	30.8	22.5	34.2	19.7	55,295	2,252	11,003	11,003
Europe	362,356	29.6	20.8	24.6	23.8	28.1	19.2	569,297	756	110,460	129,229
Latin America	23,680	31.0	23.5	26.0	31.3	34.3	20.6	72,074	146	10,096	20,775
Middle East	10,698	33.4	23.5	25.1	34.4	38.9	31.5	>39,023	486	4,221	>12,917
Middle East (Israel)	20,586	26.3	19.4	24.3	NA	NA	NA	26,608	4,140	6,267	6,267
North America	87,539	40.8	33.1	40.8	43.9	53.5	36.5	188,895	565	60,494	80,056
Total	682,659	28.5	20.5	25.8	24.8	30.9	22.2	>1,251,881	418	229,442	>311,840

Note: Israel did not separate ICSI and IVF. The total numbers and numbers by region were calculated only from the countries with complete data (e.g., number of both pregnancies and oocyte aspirations). Aspirations were imputed by applying the average cancellation rate to the number of initiated cycles, when not reported. The cumulative rate per aspiration was computed by adding the FET deliveries and babies to those obtained after fresh cycle, the sum being divided by the number of aspirations. PR/Asp was imputed by calculating the number of aspirations from the number of initiated cycles reported, when not reported. DR/Asp was imputed by calculating the mean percentage of deliveries per pregnancy, when not reported. DR/Asp cumul. was Imputed by calculating the mean percentage of deliveries per pregnancy. Asp = aspirations; cumul. = cumulative; NA = not available.

[a] In countries where the sum of singleton, twins, and triplets was less than the total number of deliveries, the number of unknown babies and lost to follow-up deliveries were estimated by applying the distribution of observed deliveries when this was known.

[b] Initiated cycles overall, countries' estimation. Step 1: Reported cycles for countries reporting them, or estimation by applying their cancellation rate to the aspiration numbers for the countries not reporting them. Step 2: Total of step 1, if 100% of the clinics reported, or estimation by applying the percentage of participating clinics to this total in the other situations.

[c] Total estimated number of cycles in the country, divided by its population in 2005 (Central Intelligence Agency World Fact Book).

[d] Imputed by multiplying number of deliveries by the average number of babies per delivery category described in form 4.

[e] Total babies also includes PGD and OD.

[f] Total babies reported if 100% of the clinics reported, or estimation by applying the percentage of participating clinics to this total in the other situations.

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TABLE 2

IVF, ICSI, and FET (pregnancies and deliveries) for the year 2007.

	IVF		ICSI		FET		IVF and ICSI, fresh
Country name	**PR/Asp**	**DR/Asp**	**PR/Asp**	**DR/Asp**	**PR/FET**	**DR/FET**	**DR/Asp**
India	35.5	NA	NA	NA	27.8	NA	NA
Japan	14.4	8.9	12.9	7.8	32.1	19.5	8.3
South Korea	35.3	NA	28.5	NA	30.0	NA	NA
Australia	NA	NA	NA	NA	22.5	17.2	NA
New Zealand	NA	NA	NA	NA	31.1	24.2	NA
Albania	40.0	33.8	37.2	29.5	NA	NA	31.5
Austria	NA	NA	NA	NA	31.8	NA	NA
Belgium	29.8	22.4	28.4	20.6	21.7	16.0	21.0
Bosnia and Herzegovina	32.1	14.3	19.3	12.3	NA	NA	12.7
Bulgaria	33.8	25.6	31.6	25.8	17.1	10.0	25.7
Cyprus	39.2	NA	40.2	NA	25.7	NA	NA
Czech Republic	NA	NA	NA	NA	26.0	17.6	NA
Denmark	26.1	21.3	26.0	21.3	19.1	15.7	21.3
Finland	27.3	20.6	27.9	22.4	24.0	18.3	21.3
France	24.6	19.2	25.9	20.5	17.8	13.0	20.0
Germany	29.4	16.0	28.2	16.1	19.1	10.4	16.1
Greece	36.8	26.5	32.8	24.2	24.0	14.8	25.1
Hungary	27.4	21.5	28.2	22.8	24.3	13.9	22.5
Iceland	25.1	21.9	28.2	23.0	25.0	20.5	22.4
Ireland	33.9	27.4	29.0	26.3	25.1	17.3	27.0
Italy	22.0	15.2	22.0	14.3	15.7	8.9	14.5
Latvia	42.3	NA	29.3	NA	7.1	NA	NA
Lithuania	NA	NA	NA	NA	21.7	6.5	NA
Macedonia	30.3	24.2	29.1	21.0	34.6	23.1	22.7
Montenegro	20.8	20.8	22.8	20.3	NA	NA	20.4
Netherlands	27.6	20.5	31.8	25.1	24.0	17.8	22.6
Norway	30.2	26.1	27.3	23.2	25.1	20.4	24.6
Poland	33.2	28.2	35.4	29.0	21.3	16.4	29.0
Portugal	30.6	23.7	27.9	20.4	22.2	16.0	21.5
Russia	35.2	24.1	33.1	20.4	25.6	16.0	22.5
Serbia	24.5	17.3	34.5	29.8	NA	NA	22.3
Slovenia	33.9	25.7	28.5	23.7	20.5	15.4	24.3
Spain	34.6	33.3	33.6	17.8	30.8	16.0	19.4
Sweden	32.0	24.7	28.4	22.4	26.4	19.6	23.6
Switzerland	28.1	20.9	27.4	20.1	20.6	13.9	20.3
Turkey	NA	NA	37.3	NA	NA	NA	NA
Ukraine	40.3	29.8	37.4	30.9	30.4	23.7	30.4
United Kingdom	30.1	26.4	31.1	27.5	22.5	19.5	27.0
Argentina	28.7	21.1	26.5	21.5	22.4	14.4	21.4
Bolivia	39.1	39.1	22.0	22.0	5.0	0.0	28.1
Brazil	32.4	26.1	31.7	23.7	25.0	18.9	23.8
Chile	43.7	36.5	33.9	26.3	20.7	14.5	27.7
Colombia	34.4	26.6	28.6	24.2	25.0	22.3	24.9
Ecuador	36.8	26.3	36.8	30.4	25.0	8.3	30.0
Guatemala	42.9	33.3	43.3	33.3	0.0	0.0	33.3
Mexico	29.2	23.7	30.0	22.8	26.9	20.3	23.1
Peru	33.3	26.9	30.4	18.1	32.4	29.4	20.8
Uruguay	50.0	41.7	28.4	24.2	35.0	25.0	25.1
Venezuela	35.2	24.9	32.1	25.3	32.7	27.7	25.1
Egypt	34.8	28.4	33.4	23.9	32.3	10.8	23.9
Lebanon	NA	NA	28.5	16.2	0.0	0.0	16.1
Saudi Arabia	47.2	37.5	42.9	26.5	13.3	6.7	29.2
Israel	NA	NA	NA	NA	23.8	NA	NA
Canada	37.7	30.3	38.7	31.4	25.9	19.5	31.1
United States	42.4	34.4	40.4	32.8	39.0	30.5	33.3
Region							
Asia	21.1	8.9	15.5	7.8	31.7	19.5	8.3
Australia and New Zealand	NA	NA	NA	NA	23.2	17.7	NA
Europe	29.1	21.9	29.9	19.9	22.1	15.1	20.6
Latin America	31.7	24.8	30.4	23.3	24.4	17.8	23.5
Middle East	38.8	31.3	33.3	23.4	31.8	10.7	23.5
Middle East (Israel)	NA	NA	NA	NA	23.8	NA	NA
North America	41.9	34.0	40.3	32.7	37.3	29.1	33.1
Total	27.8	20.1	29.0	20.4	26.9	18.4	20.3

Note: Values are %. Israel did not separate ICSI and IVF. Asp = aspiration; NA = not available.

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TABLE 3

Pregnancy miscarriages or stillbirths, prematurity, and perinatal mortality for the year 2007.

	Aspiration cycles (IVF and ICSI)					FET				
	Pregnancies			Deliveries		Pregnancies			Deliveries	
Country name	Reported (n)	Pregnancy outcome reported (n)	Early pregnancy losses (%)	Preterm (%)	Perinatal mortality (per 1,000)	Reported (n)	Pregnancy outcome reported (n)	Early pregnancy losses (%)	Preterm %	Perinatal mortality (per 1,000)
India	NA	NA	NA	NA	NA	544	543	24.5	NA	NA
Japan	15,097	12,991	29.7	13.6	10.2	13,964	11,945	30.0	12.7	7.0
South Korea	6,612	2,150	NA	NA	26.3	1,450	416	NA	NA	8.0
Australia	7,054	6,914	19.5	16.9	14.6	3,772	3,706	22.3	14.2	13.4
New Zealand	857	847	19.6	14.7	17.7	419	415	21.4	12.3	5.8
Albania	55	53	15.1	NA	NA	NA	NA	NA	NA	NA
Austria	1,738	NA	NA	NA	NA	94	NA	NA	NA	NA
Belgium	4,655	4,321	21.6	15.2	NA	1,145	1,081	22.6	11.6	NA
Bosnia and Herzegovina	31	31	41.9	NA	NA	0	NA	NA	NA	NA
Bulgaria	393	348	10.9	NA	NA	12	12	41.7	NA	NA
Cyprus	497	NA	NA	NA	NA	37	NA	NA	NA	NA
Czech Republic	3,504	NA	NA	NA	NA	979	NA	NA	NA	NA
Denmark	2,803	2,803	18.0	NA	NA	439	439	17.8	NA	NA
Finland	1,264	1,260	22.5	13.6	NA	736	736	24.5	11.1	NA
France	13,156	13,147	21.2	NA	NA	2,636	2,636	27.4	NA	NA
Germany	12,277	9,612	27.7	22.2	NA	3,134	2,487	31.6	18.2	NA
Greece	712	613	15.0	23.1	NA	44	39	30.8	50.0	NA
Hungary	653	630	16.8	NA	NA	143	109	24.8	NA	NA
Iceland	103	103	15.5	10.3	NA	61	61	18.0	10.2	NA
Ireland	779	779	15.5	NA	NA	155	155	31.0	NA	NA
Italy	7,847	6,823	24.4	NA	NA	104	89	33.7	NA	NA
Latvia	66	61	85.2	NA	NA	8	NA	NA	NA	NA
Lithuania	114	NA	NA	NA	NA	10	NA	NA	NA	NA
Macedonia	283	260	16.9	36.2	NA	9	9	33.3	66.7	NA
Montenegro	61	61	9.8	20.0	NA	NA	NA	NA	NA	NA
Netherlands	4,436	NA	NA	NA	NA	848	NA	NA	NA	NA
Norway	1,550	1,542	14.1	NA	NA	444	NA	NA	NA	NA
Poland	1,683	1,559	11.4	NA	NA	467	434	17.3	NA	NA
Portugal	1,158	1,092	21.0	22.4	NA	86	85	27.1	14.8	NA
Russia	7,267	5,678	20.3	24.7	NA	737	544	24.1	18.7	NA
Serbia	306	272	12.1	8.4	NA	NA	NA	NA	NA	NA
Slovenia	837	829	18.7	32.7	NA	98	94	21.3	11.9	NA
Spain	10,430	7,788	23.1	31.2	NA	2,101	1,546	29.4	31.9	NA
Sweden	2,882	2,847	21.1	7.3	NA	1,046	1,036	25.1	7.1	NA
Switzerland	1,137	1,133	26.7	22.3	NA	619	618	32.7	16.6	NA
Turkey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ukraine	1,480	1,403	17.3	NA	NA	169	163	19.0	NA	NA
United Kingdom	10,276	10,140	10.3	19.9	NA	1,788	1,761	12.1	16.9	NA
Argentina	1,363	1,328	16.1	16.1	4.7	223	151	5.3	11.6	13.5
Bolivia	18	15	0.0	35.7	0.0	1	1	100.0	NA	NA
Brazil	3,515	3,476	18.8	26.3	20.4	364	364	24.7	16.0	16.0

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TABLE 3

Continued.

	Aspiration cycles (IVF and ICSI)					FET				
	Pregnancies			Deliveries		Pregnancies			Deliveries	
Country name	Reported (n)	Pregnancy outcome reported (n)	Early pregnancy losses (%)	Preterm (%)	Perinatal mortality (per 1,000)	Reported (n)	Pregnancy outcome reported (n)	Early pregnancy losses (%)	Preterm %	Perinatal mortality (per 1,000)
Chile	421	410	17.6	27.1	29.1	50	49	28.6	18.8	0.0
Colombia	318	311	15.8	15.5	3.2	28	27	7.4	8.0	0.0
Ecuador	70	61	16.4	33.3	15.6	9	9	66.7	33.3	0.0
Guatemala	22	22	22.7	12.5	0.0	0	0	NA	NA	NA
Mexico	985	957	17.6	26.2	2.2	86	80	18.8	27.6	0.0
Peru	227	225	22.2	37.6	5.0	22	22	9.1	31.3	0.0
Uruguay	66	66	13.6	28.6	14.9	14	14	28.6	50.0	0.0
Venezuela	242	239	21.3	21.6	8.5	33	33	15.2	15.4	0.0
Egypt	3,222	2,364	19.5	39.5	72.4	487	262	40.5	31.4	45.2
Lebanon	218	218	43.1	16.1	6.0	0	0	NA	NA	NA
Saudi Arabia	131	115	38.3	50.8	84.2	4	4	50.0	0.0	0.0
Israel	5,419	NA	NA	NA	NA	1,479	NA	NA	NA	NA
Canada	3,266	3,196	17.6	24.9	23.4	774	762	23.5	19.7	15.2
United States	32,396	32,157	18.5	NA	NA	7,859	7,810	21.4	NA	NA
Region										
Asia	>21,709	>15,141	29.7	13.6	13.6	15,958	12,904	29.8	12.7	7.1
Australia and New Zealand	7,911	7,761	19.5	16.7	15.0	4,191	4,121	22.2	14.0	12.6
Europe	>94,433	>75,188	20.3	21.5	NA	>18,149	>14,134	25.2	17.1	NA
Latin America	7,247	7,110	18.0	24.0	13.9	830	750	19.6	17.3	10.5
Middle East	3,571	2,697	22.2	38.5	68.8	491	266	40.6	31.0	44.8
Middle East (Israel)	5,419	NA	NA	NA	NA	1,479	NA	NA	NA	NA
North America	35,662	35,353	18.4	24.9	23.4	8,633	8,572	21.6	19.7	15.2
Total	>175,952	>143,250	20.6	20.8	19.9	>49,731	>40,747	25.5	15.0	9.6

Note: Pregnancy outcome reported = (pregnancy losses + deliveries total). Preterm: <37 wk. Perinatal mortality = (stillbirths + neonatal deaths/stillbirths+live births)*1000. Losses = abortions (spontaneous and induced) and ectopic pregnancies. NA = not available.

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TABLE 4

Fresh nondonor IVF and ICSI cycles: number of transferred embryos and multiple births for the year 2007.

			No. of transferred embryos (%)					Multiple births	
Country name	Aspirations	Transfers	1	2	3	≥4	Average	Twin (%)	Triplet+ (%)
India	14,903	14,225	10.1	21.5	47.3	21.2	2.85	22.4	4.1
Japan	111,130	61,761	46.5	39.8	13.0	0.7	1.68	11.7	0.3
South Korea	21,065	19,756	9.1	14.3	27.5	49.1	3.38	32.7	0.4
Australia	NA	23,615	59.6	39.7	0.7	0.0	1.41	10.5	0.2
New Zealand	NA	2,199	61.3	36.2	2.3	0.3	1.42	8.1	0.0
Albania	143	131	25.2	29.0	44.3	1.5	2.22	17.8	2.2
Austria	NA	4,912	NA	NA	NA	NA	NA	NA	NA
Belgium	16,209	14,878	50.2	39.6	8.4	1.7	1.62	11.8	0.3
Bosnia and Herzegovina	142	123	49.6	13.8	25.2	11.4	1.98	5.6	0.0
Bulgaria	1,207	1,126	8.3	35.6	44.2	11.9	2.61	14.8	1.6
Cyprus	1,249	1,201	NA	NA	NA	NA	NA	NA	NA
Czech Republic	NA	9,172	NA	NA	NA	NA	NA	NA	NA
Denmark	10,771	9,226	39.6	55.7	4.5	0.1	1.65	16.6	0.1
Finland	4,589	4,123	57.8	41.9	0.3	0.0	1.42	11.3	0.2
France	51,846	44,453	23.2	62.3	13.2	1.3	1.92	18.9	0.4
Germany	43,119	41,615	12.5	66.9	20.6	0.0	2.08	21.2	0.6
Greece	2,075	1,852	11.9	19.3	58.6	10.3	2.67	25.7	0.8
Hungary	2,331	2,146	10.1	45.3	35.7	8.9	2.44	22.5	2.1
Iceland	389	322	46.6	46.0	7.5	0.0	1.61	17.2	0.0
Ireland	2,440	2,221	13.6	77.4	9.0	0.0	1.95	24.3	0.9
Italy	35,645	30,780	20.4	30.5	49.1	0.0	2.29	20.6	2.8
Latvia	179	173	15.0	53.8	31.2	0.0	2.16	44.4	11.1
Lithuania	NA	379	NA	NA	NA	NA	NA	NA	NA
Macedonia	952	750	23.9	26.9	30.9	18.3	2.46	26.4	1.4
Montenegro	270	258	14.3	32.2	41.1	12.4	2.52	16.4	1.8
Netherlands	15,058	13,375	NA	NA	NA	NA	NA	NA	NA
Norway	5,388	4,821	NA	NA	NA	NA	NA	13.4	0.3
Poland	4,767	4,338	16.6	67.9	15.1	0.4	1.99	20.3	0.6
Portugal	4,021	3,585	17.4	69.2	13.3	0.2	1.96	21.6	0.9
Russia	21,173	19,510	16.1	59.7	19.8	4.4	2.13	26.0	1.5
Serbia	1,074	911	13.3	77.1	6.9	2.7	1.99	8.8	3.3
Slovenia	2,776	2,462	27.6	69.7	2.6	0.0	1.75	23.0	0.0
Spain	30,946	27,155	NA	NA	NA	NA	NA	27.1	0.7
Sweden	9,511	8,529	69.9	30.1	0.0	0.0	1.30	4.6	0.1
Switzerland	4,121	3,731	12.8	65.3	21.9	0.0	2.09	18.9	0.5
Turkey	35,386	31,568	11.5	24.1	52.8	11.7	2.65	32.9	4.1
Ukraine	3,818	3,510	11.3	44.2	33.1	11.4	2.48	25.0	1.6
United Kingdom	33,559	31,018	12.8	82.3	4.9	0.0	1.92	24.1	0.3
Argentina	5,072	4,383	14.6	41.7	38.4	5.3	2.35	15.9	2.0
Bolivia	64	63	6.3	47.6	38.1	7.9	2.48	33.3	6.7
Brazil	11,070	10,059	10.1	28.9	38.1	22.9	2.76	22.6	4.2
Chile	1,195	1,061	10.9	44.7	40.8	3.6	2.37	27.8	3.8
Colombia	1,048	960	13.6	41.1	33.6	11.6	2.48	15.3	1.1
Ecuador	190	170	5.3	47.1	42.9	4.7	2.47	33.3	2.0
Guatemala	51	48	4.2	22.9	41.7	31.3	3.02	17.6	5.9
Mexico	3,313	2,995	10.9	27.3	43.1	18.7	2.72	16.5	2.5
Peru	726	642	13.7	56.5	22.3	7.5	2.24	25.1	1.1
Uruguay	223	192	12.5	32.3	42.7	12.5	2.55	14.0	1.8
Venezuela	728	712	14.7	40.0	40.3	4.9	2.35	21.3	3.2
Egypt	9,631	8,397	10.1	19.9	50.1	19.8	2.87	29.6	1.7
Lebanon	769	682	17.3	21.8	18.5	42.4	3.12	33.9	0.0
Saudi Arabia	298	279	15.8	24.8	59.4	0.0	2.44	28.2	4.2
Israel	NA	17,308	NA	NA	NA	NA	NA	NA	NA
Canada	8,501	7,960	12.2	57.1	22.8	7.9	2.29	29.2	1.1
United States	79,038	72,162	10.8	48.4	26.1	14.8	2.50	29.6	1.8
Region									
Asia	147,098	95,742	33.5	31.9	21.0	13.6	2.20	17.6	1.4
Australia and New Zealand	NA	25,814	59.7	39.4	0.9	0.0	1.41	10.3	0.2
Europe	>345,154	324,354	21.4	53.4	22.7	2.5	2.06	21.3	1.0
Latin America	23,680	21,285	11.6	34.1	38.5	15.9	2.60	20.5	3.2
Middle East	10,698	9,358	10.7	20.1	47.9	21.3	2.88	29.8	1.7
Middle East (Israel)	NA	17,308	NA	NA	NA	NA	NA	NA	NA
North America	87,539	80,122	10.9	49.2	25.7	14.1	2.48	29.5	1.7
Total	>614,169	573,983	23.4	46.3	22.9	7.3	2.16	22.3	1.3

Note: NA = not available.

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and DR at 20.1% vs. 20.4%, respectively. The results are comparable to those from the previous year, although the average number of transferred embryos dropped to 2.16 from 2.22. For FET cycles, the number of transferred embryos, effectiveness, and multiplicity are reported in Supplemental Table 3. The PR and DR increased compared with the previous year, to 26.9% and 18.4%, respectively, in 2007, vs. 26.4% and 17.8% in 2006, even though the average number of embryos transferred declined to 1.83 from 1.99.

The PRs and DRs per aspiration varied considerably among countries (Supplemental Figs. 1–3); as expected, the cumulative DR per aspiration varied among countries, with an average of 25.8% globally, the highest being in North America at 40.8% (Table 3). The miscarriage rate per clinical pregnancy (Table 3) averaged 20.6% in fresh cycles and 25.5% in FET cycles.

A total of 229,442 babies (Table 1) were reported born in 2007, and the estimated total number of babies, based on extrapolation of numbers from nonreporting clinics and countries, was >311,840. The proportion of women aged ≥40 years increased to 19.8% from 15.5% in 2006, with the highest rate reported by Japan (34.8%) (Supplemental Table 4). The DR decreased to 7.5% in the group aged >40 years (Supplemental Fig. 4 and Supplemental Tables 5, 6).

Safety

The proportion of single-embryo transfers (SETs) with a fresh embryo increased from 20.7% in 2006 to 23.4%, with 5 countries in which SET rates were >50%: Sweden (69.9%), New Zealand (61.3%), Australia (59.6%), Finland (57.8%), and Belgium (50.2%) (Table 4). The percentage of transfers with ≥4 embryos in fresh cycles decreased, from 9.0% in 2006 to 7.3%, but with major differences within and among regions. The regions with the lowest proportion of ≥3 ETs were in Australia and New Zealand, with only 0.9%, followed by Europe with 25.2%, and Asia with 34.6%. The mean number of ETs was lowest in Japan, Australia, New Zealand, Belgium, Denmark, Finland, Iceland, and Sweden, varying between 1.3 and 1.7 embryos; in South Korea and several countries in Latin America and the Middle East, the mean number of ETs remained at >3 embryos (Supplemental Fig. 5). The percentage of transfers with ≥4 embryos in FET cycles was 3.3%, whereas 38.2% of FET cycles involved SET (Supplemental Table 3).

The proportion of twin deliveries remained at 22.3% (22.2% in 2006) with fresh ETs, whereas the twin rates after FET decreased from 16.4% in 2006 to 14.5%. The proportion of triplet deliveries after fresh ET and FET continued to decrease, from 1.5% to 1.3% and 0.8%–0.5%, respectively. However, multiple PRs varied markedly among countries (Table 4; Supplemental Table 3); the percentage of twin births ranged from 4.6% in Sweden to >25% in 8 countries (Turkey, South Korea, the United States, Egypt, Canada, Spain, Russia, and Ukraine), of countries reporting >2,000 fresh ET cycles. The births of triplet and higher-order multiples ranged from 0% to 0.3% in 10 countries (New Zealand, Slovenia, Denmark, Sweden, Australia, Finland, Japan, Belgium, Norway, and the United Kingdom), of the countries reporting >2,000 fresh ET cycles. In contrast, these figures were 2%–5% in India, and in several countries in Latin America, the Middle East, and Europe, such as Italy, Hungary, and Albania.

The proportion of triplets and higher-order multiples was even higher in countries with few treatment cycles per year, such as Latvia, Bolivia, and Guatemala (Supplemental Fig. 6). Frozen ET resulted in fewer twins and triplets; however, in several countries, the figures exceeded 20% (e.g., 29.8% of the births were twins in South Korea) (Supplemental Table 3). The mean number of embryos transferred was not correlated with the overall DRs ($r = 0.26$, $P=.09$) (Supplemental Fig. 7), but it was correlated with the triplet rate ($r = 0.36$, $P=.015$) (Supplemental Figs. 8–10). The result by number of embryos transferred is described in Supplemental Table 7 (fresh ET) and Supplemental Table 8 (FET).

The proportion of preterm deliveries was 20.8% for fresh transfers and 15.0% for FET. These figures are constantly declining compared with previous reports.

For the 27 countries for which information was available for >100 deliveries after fresh ETs, the rate of preterm births was strongly correlated with the mean number of transferred embryos ($r = 0.50$, $P=.0008$) as well as the rate of multiple deliveries with the number of transferred embryos ($r = 0.78$, $P<.0001$) (Supplemental Fig. 11). The perinatal mortality rate was 19.9 per 1,000 for fresh aspiration for IVF with ICSI, compared with 9.6 per 1,000 for FET (Table 3). The frequency of ovarian hyperstimulation syndrome was reported as 0.9%, with a regional range of 0.1%–1.1% (Supplemental Table 9). The rate of this syndrome has decreased continuously year by year in our reports.

Special Techniques—Ovum Donation, PGD, In Vitro Maturation, Surrogacy, Fetal Reduction, and IUI

A total of 37,339 ovum donation (OD) cycle transfers were reported from 40 countries (Supplemental Table 10). The age of the recipients was >40 years in 62.8% of the cases. The overall DR was 36.6% per transfer; however, the multiple-birth rate was 31.0%. Of the 19,954 babies born after OD, the country with the highest number, with 11,129 (55.8%) babies born, was the United States, followed by Spain with 3,192 (16.0%), and the United Kingdom with 582 (2.9%).

Twenty-eight countries reported 10,093 aspiration cycles for PGD in 2007. The number of babies born after PGD was 2,830 with a DR per aspiration of 23.3% (Supplemental Table 11). The information regarding in vitro maturation, fetal reduction, and maternal surrogacy was incomplete (Supplemental Table 9). Thirty-four countries reported 151,220 IUI (with sperm from the husband or partner) cycles, and 31 countries reported 32,870 IUI (with sperm from a donor) cycles. We received these data from regions of Asia, Australia and New Zealand, and Latin America, for the first time, in addition to European countries. The PRs and DRs per cycle, for IUI with sperm from the husband or partner, were 12.5% and 9.4%, respectively; for IUI with sperm from a donor, they were 16.5% and 12.9 %, respectively (Supplemental Tables 12, 13).

DISCUSSION

The ICMART World Reports are the most comprehensive global statistical reports on ART practice: They include measures of access and availability, effectiveness, and safety of

services, all of which have been monitored since 2000 (1–6). In 2007, an estimated >1,251,881 ART cycles were reported by 2,419 clinics, resulting in the birth of a reported 229,442 babies (Table 1). This number of babies is a 6.3% increase compared with our report of 2006, reflecting a higher number of clinics and countries participating in ICMART, and wider usage of ART (6). The statistical imputation we used with the reported 2007 data, to take into account missing data of initiated cycles from some contributors as well as some countries not reporting, results in an estimated total number of babies that is 36% more than actually reported.

Availability

The accessibility to ART treatments obviously depends on the availability of specialized ART clinics in each country. As previously described, the availability of ART varies among countries and regions, owing to their social, cultural, and economic differences, and critically, the public vs. private funding model that is in place (5, 14). The estimated overall cycles of ART also varied widely. Japan, followed by the United States, reported the highest number of treatments in 3 consecutive years since 2005. In the past few years, Japan has increased the number of IVF cycles the most of all countries. However, despite multiple efforts, we were not able to obtain 2007 data from People's Republic of China, the country with the largest population in the world. From other sources, we estimate that People's Republic of China performed approximately 100,000 cycles of ART during 2007 (15). Inclusion of data from large countries such as People's Republic of China and Indonesia is essential to monitor the worldwide availability of ART. India and Indonesia are now submitting data, and ICMART is continuing efforts to have People's Republic of China contribute their data. In addition, we note the absence of data from sub-Saharan Africa.

The country where ART is most available, based on cycles per population, is Israel, as a result of very substantial economic support for patients undergoing IVF. In addition, Australia and New Zealand, and European countries, especially in northern Europe, strongly support ART services. These distributions of economic support for ART have not changed dramatically since ICMART's first World Report 2000 (1).

Changes of ART Practice in This Year

As we have described previously, the trend of performing a high proportion of ICSIs continued to increase to 66.0% in 2006, up from 47.6% in 2000 (6). However, the rapid rise finally seemed to level off in 2007, with 65.2% of all reported cycles using ICSI. This change in trajectory for ICSI cycles may be partially explained by changes in the countries that contribute data to ICMART. India did not provide data in 2007 regarding the proportion of ICSI, and this may have affected the proportion in a negative direction. The proportion of ICSI still varied very much according to region, with the lowest being in Asia (54.7%), and the highest in the Middle East (97.8%). However, in addition, ICSI usage may have started to reach saturation levels, even in the regions with the highest usage levels, including Latin America (84.1%) and the Middle East (97.8%).

The number of FET cycles was 92,702 (11.3% of all estimated cycles) in 2002 and then continuously increased in recent years (in 2004, to >133,585; in 2005, to >143,782; and in 2006, to >167,702). In 2007, the number reached >184,746 cycles (14.8% of total cycles). However, the proportion of FET cycles also varied greatly among regions and countries. Increasing introduction of vitrification methods could result in a wider application of embryo freezing, and policies influencing the number of ET cycles may in addition affect the proportion of FET, because spare embryos can be frozen. Economic support for FET through insurance reimbursement or social insurance policy in several countries (e.g., Japan) has resulted in transfer of fewer embryos, and this has created the clinical environment to increase cryopreservation cycles.

The number of reported oocyte donation cycles was 37,339 in 2007, higher than the >36,272 in 2006, and much higher than the 14,887 in 2000. The rate of oocyte donation cycles differed greatly according to countries because using donor oocytes for ART is prohibited by legislation or guidelines in several countries (16). Therefore, interpretation of differences among countries requires caution. The necessity of using donated eggs usually depends on the age of the women who wish to conceive with their own eggs but have not been successful. However, this report shows the wide variation in age distribution among countries, which affects utilization of donor eggs (Supplemental Table 4).

Effectiveness

As described, FET has become more common in recent years, internationally. This practice change has made the assessment of the effectiveness of ART more complex, with no international consensus as to the single best method to ascertain the overall effectiveness of ART through calculation of cumulative DRs after a single ovarian-stimulation and egg-retrieval cycle (12, 13, 15). However, the estimated cumulative PRs and DRs, using fresh ET cycles coupled with FETs, in the recent series of ICMART World Reports, is 1 method that could be used to compare the annual consecutive statistics. In 2007, the cumulative DR increased to 25.8%, compared with 25.2% in 2006, and 23.9% in 2005.

The spontaneous miscarriage rates can be another indicator of effectiveness of ART treatment. In 2007, the worldwide overall early pregnancy loss was 20.8%. However, the PRs, DRs, and spontaneous miscarriage rates depend primarily on the age of the women who provided the oocytes, not on the age of pregnant women, apart from the quality of the treatments. The distribution of women's age was unfortunately incomplete in the 2007 data. However, the wide variation in the proportion of women aged ≥40 years (range: 5.8% in Serbia to 34.8% in Japan) can partly explain the differences in PRs, DRs, and spontaneous miscarriage rates among countries. The recent analysis using Japanese ART registry data clearly showed an extremely low DR (1.2%), and a high miscarriage rate (57.9%) in nondonor ART pregnancy of women aged ≥43 years (17). Further research is needed to clarify the effect internationally of older women accessing ART.

Safety

Because multiple pregnancy is the major public health problem associated with ART practice, the continuing decrease in the average number of embryos transferred is encouraging, along with the resultant reduction in multiple PRs. The average number was 2.16 in 2007, compared with 2.22 in 2006, and 2.29 in 2005. In addition, the proportion of SET markedly rose, to 23.4% in 2007, up from 20.7% in 2006, 17.5% in 2005, and 16.4% in 2004. However, the average number of embryos transferred varied widely among countries, reflecting multiple factors in each country, especially consumer affordability, that affect access to ART (18). The cost of ART cycles and the conditions relating to insurance or reimbursement for ART seem to be critical.

The number of embryos transferred is highly correlated with rates of multiple births and preterm births. These rates are important indicators of perinatal health and risk factors for adverse child-health outcomes. The rate of higher-order (3 or more) multiple births with ART was 1.3% in 2007, owing to the decreased number of embryos transferred, down from 1.5% in both 2005 and 2006. However, continued advocacy is needed to reduce the number of ETs, because multiple rates are still high, with a worldwide rate of twin birth with ART of 22.3% in 2007. Again, policies regarding number of ETs should be accompanied with appropriate financial support for infertile patients.

With respect to maternal complications, ICMART has collected and reported the numbers for ovarian hyperstimulation syndrome and bleeding at oocyte retrieval, ever since the 2003 World Report. In addition, we have described early pregnancy loss, preterm birth, and perinatal mortality as indicators of pregnancy outcome in terms of safety. However, ICMART would like to expand data collection for detailed follow-up of both newborns and mothers. Several concerns have been raised regarding increased occurrence of perinatal complications, including pregnancy-induced hypertension and placentation problems in ART pregnancy after FET (19, 20). In addition, worldwide monitoring of ART becomes increasingly important, to assess safety for increasingly utilized newer technologies, including embryo freezing, egg freezing, prolonged culture of embryos to blastocyst stage, PGD, and preimplantation genetic screening.

The prominent rise of the proportion of women aged >40 years is a new phenomenon in this series of world reports. Higher ages among women who wish to reproduce has been a common trend in urbanized and industrialized areas. However, this trend could affect the style of ART practice worldwide, including incorporation of donor gametes, various methods for selecting transferred embryo(s), and fertility preservation through egg freezing.

Limitations

International data collection is always associated with limitations, particularly those relating to quality and completeness, and the 2007 report is not an exception. Data development activities, including the yearly ICMART contributors meetings at every annual meeting of the American Society for Reproductive Medicine and the European Society of Human Reproduction and Embryology, seem to be improving the quality of data provided by each country. However, wide variability in data collection practices remain, within and among individual countries and regions. For example, areas differ as to whether the collection is voluntary or mandatory, and whether it is done periodically or through a contemporaneous web-based system. Therefore, the data need to be interpreted with caution.

Another limitation of this report is the lack of data from several major countries, especially in Asia, including People's Republic of China and Indonesia, where ART is widely practiced and accepted. As the population levels of these countries are quite high, and the annual number of ART cycles is estimated to be high, trends in ART use could be affected by data from these countries. Indonesia is now beginning to report to ICMART, and efforts to have People's Republic of China submit data to ICMART are ongoing.

In conclusion, this report presented a summary of worldwide ART practices in 2007, which showed a move to a smaller number of embryos transferred, and to wider application of FET. These trends led to lower multiple PRs, and were accompanied by a clinically acceptable cumulative DR. The increasing use of ART by older women was notable in some regions and countries.

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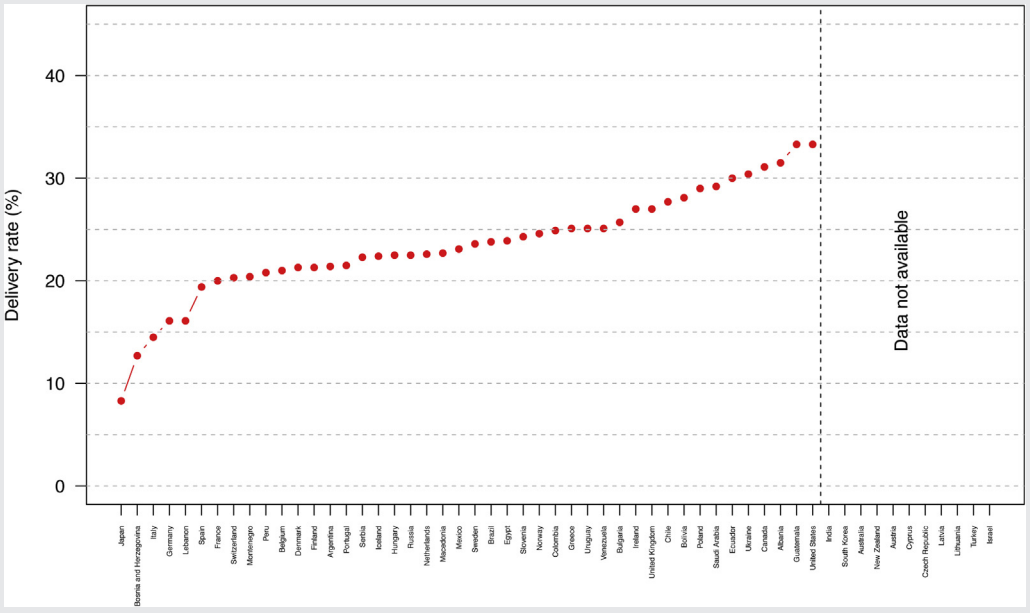
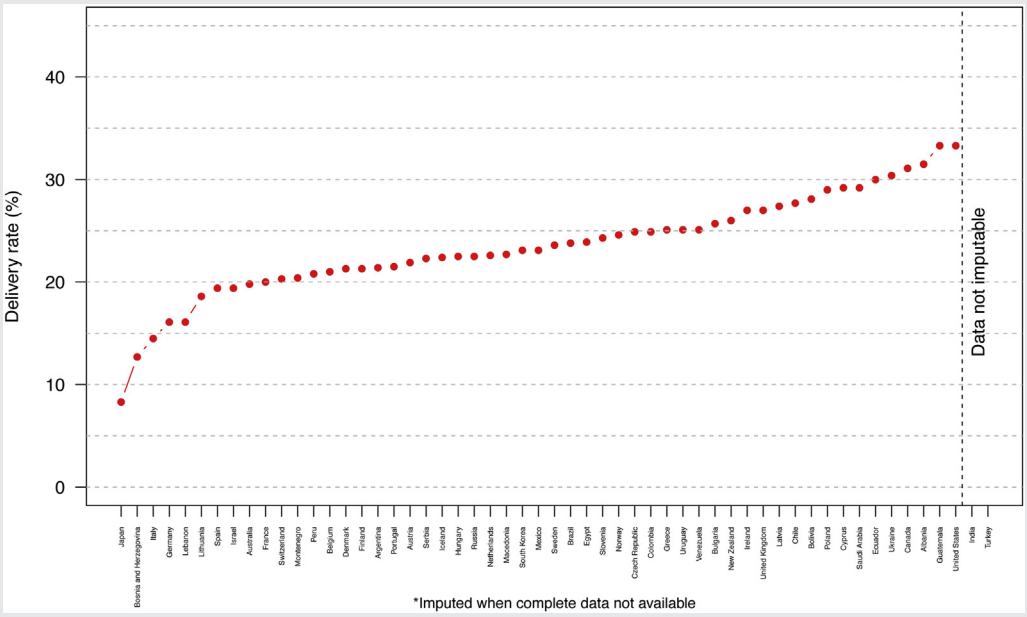
SUPPLEMENTAL FIGURE 1



Delivery rate per aspiration, by country (reported).

Ishihara. ICMART World Report on ART 2007. Fertil Steril 2015.

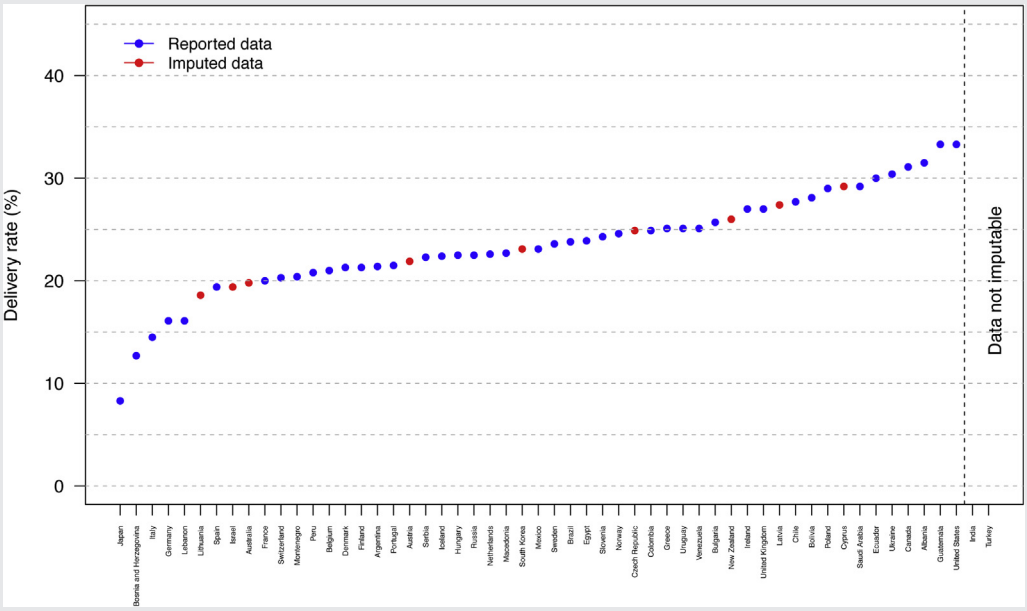
SUPPLEMENTAL FIGURE 2



Delivery rate per aspiration, by country (imputed).

Ishihara. ICMART World Report on ART 2007. Fertil Steril 2015.

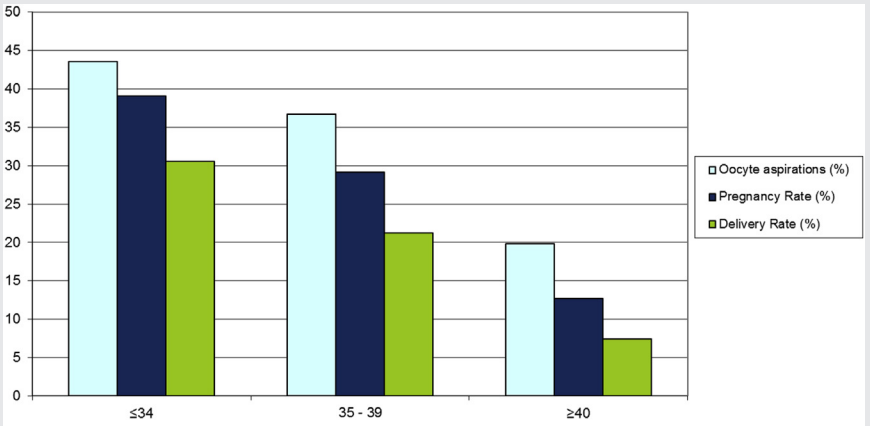
SUPPLEMENTAL FIGURE 3



Delivery rate per aspiration, by country (reported and imputed combined).

Ishihara. ICMART World Report on ART 2007. Fertil Steril 2015.

SUPPLEMENTAL FIGURE 4

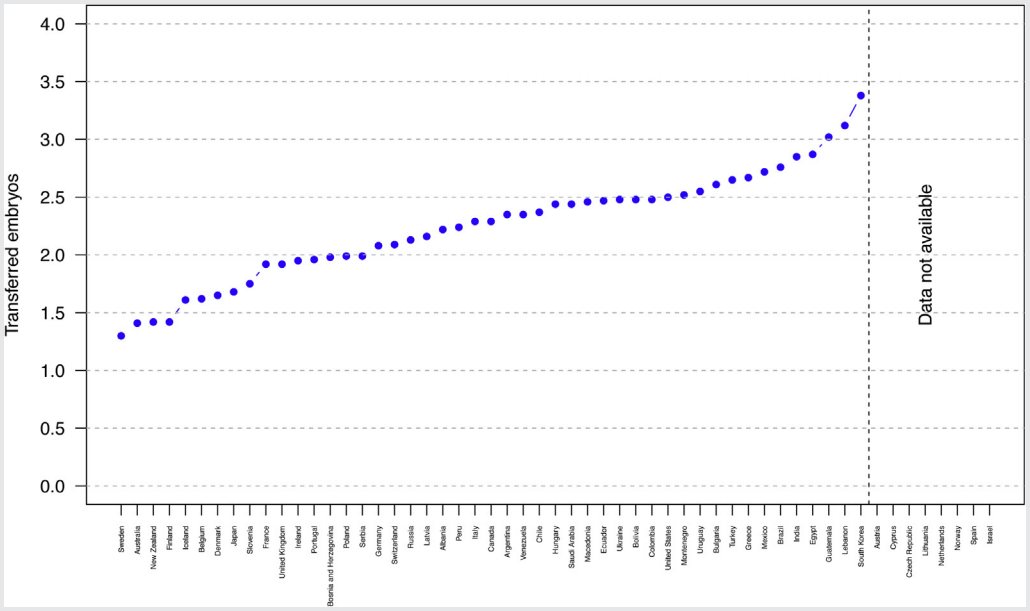


	≤34	35-39	≥40
Oocyte Aspirations (%)	43.6	36.7	19.8
Pregnancy rate (%)	39.1	29.1	12.7
Delivery rate (%)	30.5	21.2	7.5

Distribution of oocyte aspiration by age group and results according to women's age.

Ishihara. ICMART World Report on ART 2007. Fertil Steril 2015.

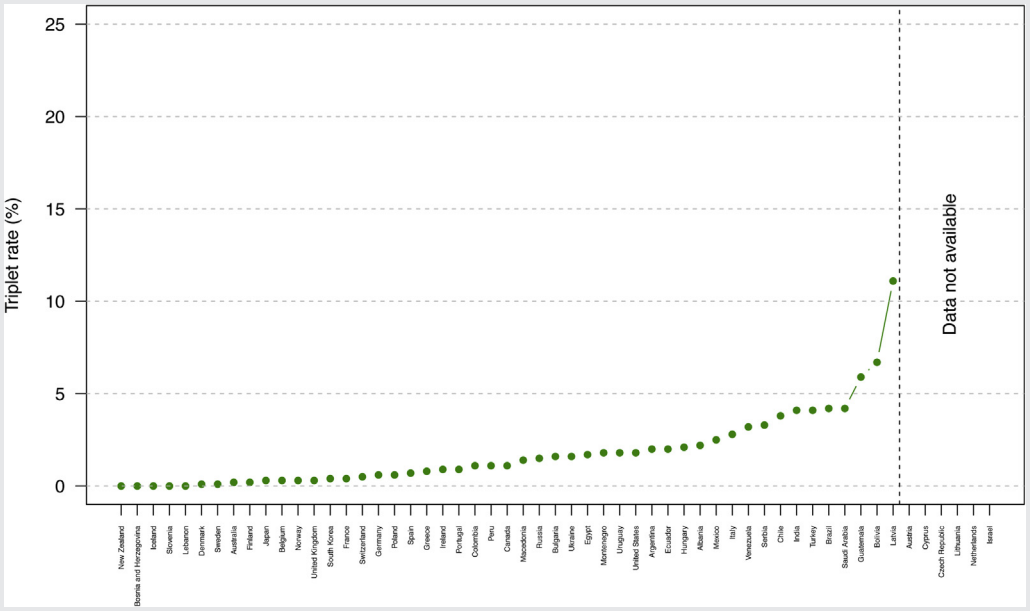
SUPPLEMENTAL FIGURE 5



The mean number of embryos transferred, by country.

Ishihara. ICMART World Report on ART 2007. Fertil Steril 2015.

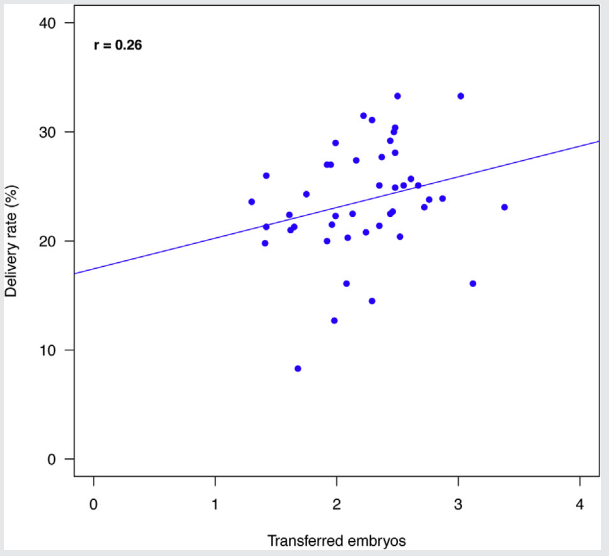
SUPPLEMENTAL FIGURE 6



Triplet rate per delivery, by country.

Ishihara. ICMART World Report on ART 2007. Fertil Steril 2015.

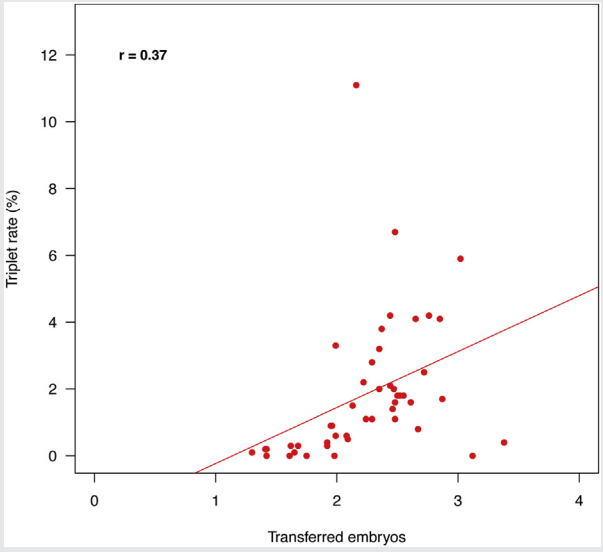
SUPPLEMENTAL FIGURE 7



Delivery rate vs. mean number of embryos transferred. $P = .09$

Ishihara. ICMART World Report on ART 2007. Fertil Steril 2015.

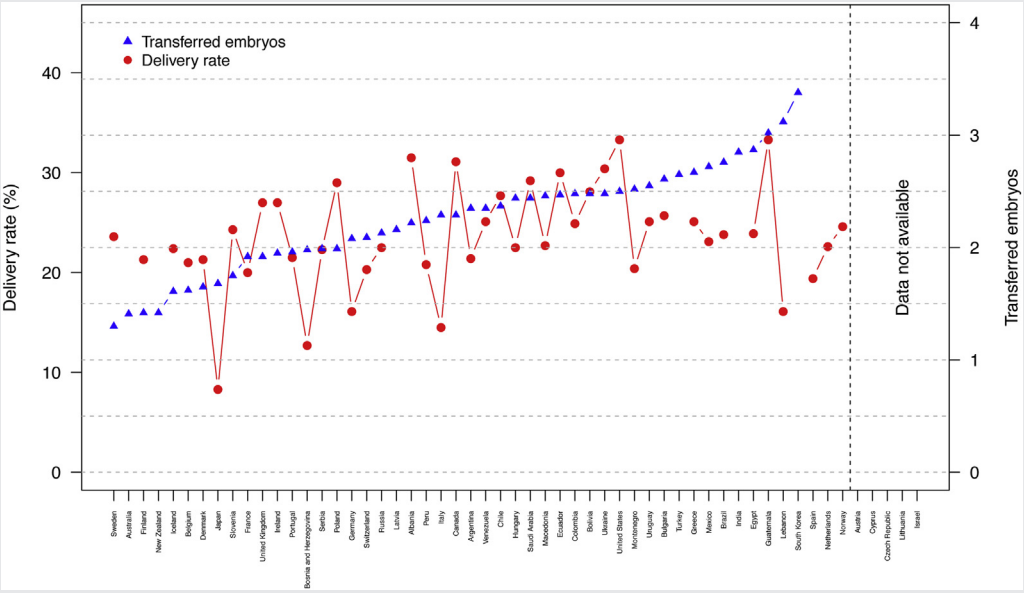
SUPPLEMENTAL FIGURE 8



Triplet rate vs. mean number of embryos transferred. $P = .009$

Ishihara. ICMART World Report on ART 2007. Fertil Steril 2015.

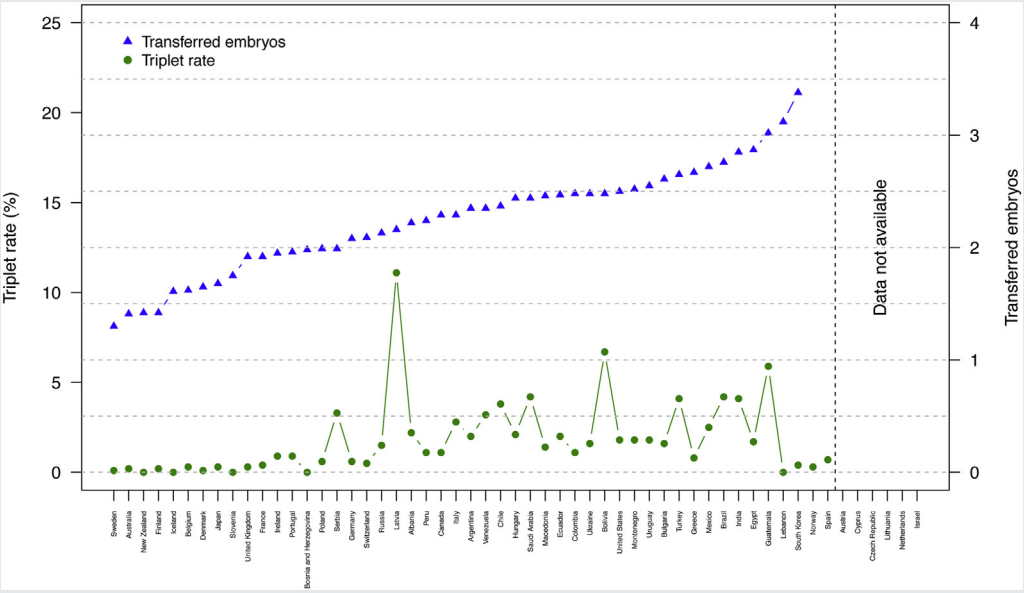
SUPPLEMENTAL FIGURE 9



Delivery rate per aspiration according to the mean number of embryos transferred, by country.

Ishihara. ICMART World Report on ART 2007. Fertil Steril 2015.

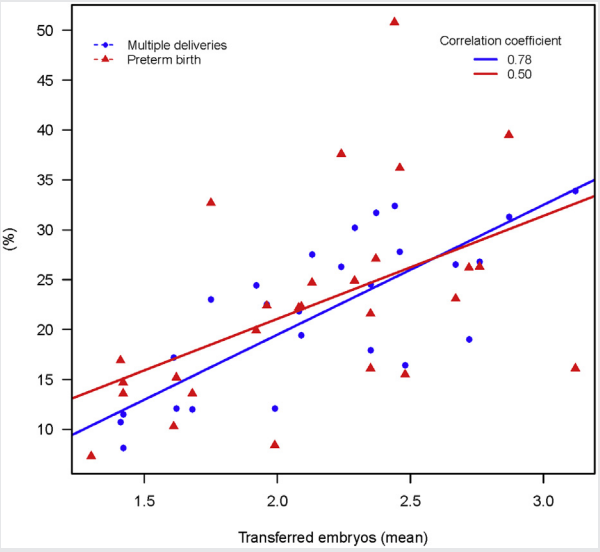
SUPPLEMENTAL FIGURE 10



Triplet rate per aspiration according to the mean number of embryos transferred, by country.

Ishihara. ICMART World Report on ART 2007. Fertil Steril 2015.

SUPPLEMENTAL FIGURE 11



Preterm birth rates and multiple delivery rates vs. mean number of embryos transferred (in countries with >100 deliveries).

Ishihara. ICMART World Report on ART 2007. Fertil Steril 2015.