



Supplementary Figure 1. Decision tree: the first-visit characteristics model.

Supplementary Table 1: Characteristics, ovarian stimulation treatments, and oocyte/embryo parameters by BMI category.

Characteristics	Underweight (<i>n</i> = 1094)	Normal (<i>n</i> = 9120)	Overweight (<i>n</i> = 3530)	Obese (<i>n</i> = 1380)	<i>H/χ</i> ² value	<i>P</i> -value
Characteristics of female						
Female age	31 (29, 35)	33 (30, 36)	33 (30, 37)	32 (29, 36)	112.47*	<0.001
Type of infertility						
Primary infertility	723 (66.1)	5106 (56.0)	1855 (52.5)	772 (55.9)	62.17†	<0.001
Secondary infertility	371 (33.9)	4014 (44.0)	1675 (47.5)	608 (44.1)		
Duration of infertility, years	3 (2, 5)	3 (2, 5)	3 (2, 6)	4 (2, 6)	67.07*	<0.001
Gravidity	0 (0, 1)	0 (0, 1)	0 (0, 1)	0 (0, 1)	55.89*	<0.001
Parity	0	0	0	0	47.53*	<0.001
The first time for IVF/ICSI	778 (71.1)	6402 (70.2)	2518 (71.3)	958 (69.4)	2.53†	0.469
Characteristics of male partner						

Male age	33 (29, 36)	34 (30, 38)	34 (30, 38)	34 (30, 37)	54.27*	<0.001
Male BMI	24.61 (22.49, 26.87)	25.11 (22.86, 27.55)	25.54 (23.30, 27.92)	25.71 (23.47, 28.34)	76.17*	<0.001
Basic evaluation						
Basal FSH, IU/L	6.00 (2.31, 7.92)	5.39 (2.48, 7.43)	5.38 (3.28, 7.08)	5.33 (3.10, 6.86)	8.78*	0.032
Basal T, nmol/L	<0.69 (<0.69, 0.77)	<0.69 (<0.69, 0.74)	<0.69 (<0.69, 0.89)	<0.69 (<0.69, 0.98)	90.22*	<0.001
Basal A ₂ , nmol/L	5.39 (3.99, 7.35)	5.29 (3.85, 7.14)	5.46 (3.89, 7.70)	6.27 (4.31, 8.79)	57.67*	<0.001
Basal endometrial thickness	5 (4, 6)	5 (4, 6)	5 (4, 6)	5 (5, 6)	9.10*	0.028
AMH	2.45 (1.36, 3.73)	2.22 (1.30, 3.74)	2.26 (1.26, 4.01)	2.26 (1.31, 3.95)	2.43*	0.488
AFC	9 (7, 13)	9 (7, 12)	10 (7, 14)	12 (8, 16)	216.51*	<0.001
Diagnosis of infertility						
PCOS‡	51 (4.7)	599 (6.6)	500 (14.2)	332 (24.1)	533.93†	<0.001
Tube factor	385 (35.2)	3382 (37.1)	1411 (40.0)	541 (39.2)	13.39†	0.004
Endometriosis	110 (10.1)	709 (7.8)	180 (5.1)	44 (3.2)	75.25†	<0.001

Uterine factor ^s	89 (8.1)	1021 (11.2)	456 (12.9)	157 (11.4)	19.99†	<0.001
Male factor	534 (48.8)	4135 (45.3)	1591 (45.1)	604 (43.8)	6.79†	0.079

Ovarian stimulation

Protocol

GnRH-a long protocol	340 (31.1)	2787 (30.6)	995 (28.2)	377 (27.3)	25.31†	0.013
GnRH-a prolonged protocol	158 (14.4)	1395 (15.3)	486 (13.8)	194 (14.1)		
GnRH-a short flare protocol	31 (2.8)	279 (3.1)	124 (3.5)	41 (3.0)		
GnRH-a ultrashort flare protocol	14 (1.3)	112 (1.2)	40 (1.1)	15 (1.1)		
GnRH antagonist protocol	551 (50.4)	4547 (49.9)	1885 (53.4)	753 (54.6)		
Stimulation duration, days	11 (10, 13)	11 (10, 13)	11 (10, 13)	12 (10, 13)	76.17*	<0.001
Total gonadotropin dose, IU	2550 (1840.62, 3450)	2775 (2000, 3650)	2850 (2100, 3675)	2925 (2175, 3750)	71.59*	<0.001
E ₂ on trigger day, pmol/L	6942.00 (5183.00, 11276.75)	6147.00 (4504.00, 9699.00)	5514.00 (3990.00, 8006.00)	5562.00 (3938.75, 7821.00)	295.06*	<0.001

LH on trigger day, IU/L	1.06 (0.58, 1.99)	1.04 (0.58, 2.12)	1.09 (0.59, 2.32)	1.13 (0.55, 2.41)	8.54*	0.036
P on trigger day, nmol/L	2.52 (1.87, 3.37)	2.20 (1.58, 2.97)	1.92 (1.34, 2.64)	1.79 (1.22, 2.55)	426.61*	<0.001
Endometrial thickness on trigger day, mm	11 (10, 12)	11 (10, 12)	11 (10, 12)	11 (10, 12)	1.90*	0.594
Endometrial pattern on trigger day						
A	992 (91.2)	8016 (88.5)	2997 (85.5)	1139 (83.0)	62.07†	<0.001
A-B	3 (0.3)	27 (0.3)	16 (0.5)	10 (0.7)		
B	93 (8.5)	1018 (11.2)	494 (14.1)	223 (16.3)		
Oocyte/embryo parameters						
Oocytes retrieved, <i>n</i>	10 (8, 12)	10 (7, 12)	10 (7, 12)	9 (7, 12)	19.43*	<0.001
Insemination method						
IVF	654 (59.8)	5593 (61.4)	2192 (62.1)	906 (65.7)	11.79†	0.067
ICSI	434 (39.7)	3480 (38.2)	1319 (37.4)	467 (33.9)		
IVF + ICSI	6 (0.5)	43 (0.5)	17 (0.5)	6 (0.4)		

2PN zygotes, <i>n</i>	5 (4, 8)	6 (4, 8)	5 (4, 7)	5 (4, 8)	11.97*	0.007
Transferable embryos, <i>n</i>	3 (2, 4)	3 (2, 4)	3 (2, 4)	3 (2, 4)	5.72*	0.126
Frozen embryos, <i>n</i>	1 (0, 3)	1 (0, 3)	1 (0, 2)	1 (0, 2)	7.53*	0.057

Data are presented as *n* (%) or median (Q1, Q3).

*Refers to *H* value tested by Kruskal–Wallis H test, and † refers to χ^2 value tested by Pearson χ^2 test

‡PCOS was diagnosed according to Rotterdam criteria. §Uterine factor included the adenomyosis, fibroids, endometrial hyperplasia, intrauterine adhesion, thin endometrium, and malformation. 2PN: 2 pronuclear; A₂: Androstenedione; AFC: Antral follicle count; AMH: Anti-Müllerian hormone; BMI: Body mass index; E₂: Estradiol; FSH: Follicle-stimulating hormone; GnRH-a: Gonadotropin-releasing hormone agonist; ICSI: Intra-cytoplasmic sperm injection; IVF: *In vitro* fertilization; LH: Luteinizing hormone; P: Progesterone; PCOS: Polycystic ovary syndrome; T: Testosterone.

Supplementary Table 2: Logistic regression analysis for cumulative outcomes in different subgroups.

Cumulative outcomes	PCOS (n = 1482)*				Not PCOS (n = 13,642)				First IVF/ICSI (n = 10,656)			
	Overweight†		Obese†		Overweight†		Obese†		Overweight†		Obese†	
	P-value	OR (95% CI)	P-value	OR (95% CI)	P-value	OR (95% CI)	P-value	OR (95% CI)	P-value	OR (95% CI)	P-value	OR (95% CI)
Cumulative positive pregnancy test	0.825	0.959 (0.661–1.391)	0.395	0.830 (0.540–1.276)	0.031	0.872 (0.771–0.987)	0.028	0.807 (0.666–0.977)	0.159	0.905 (0.788–1.040)	0.038	0.805 (0.657–0.988)
Cumulative clinical pregnancy	0.823	0.959 (0.666–1.381)	0.496	0.864 (0.567–1.317)	0.028	0.871 (0.771–0.985)	0.003	0.753 (0.623–0.911)	0.190	0.913 (0.797–1.046)	0.008	0.762 (0.623–0.932)
Cumulative live birth	0.808	0.956 (0.666–1.373)	0.179	0.749 (0.491–1.142)	0.038	0.878 (0.776–0.993)	<0.001	0.702 (0.580–0.851)	0.101	0.893 (0.781–1.022)	<0.001	0.674 (0.551–0.825)
Premature delivery	0.441	1.296 (0.671–2.503)	0.320	1.497 (0.676–3.317)	0.015	1.336 (1.057–1.689)	0.001	1.806 (1.276–2.557)	0.007	1.397 (1.097–1.779)	0.053	1.440 (0.996–2.083)
Cesarean section	<0.001	3.608 (1.954–6.663)	0.002	3.253 (1.515–6.985)	<0.001	1.718 (1.408–2.096)	<0.001	1.995 (1.425–2.793)	<0.001	1.974 (1.601–2.434)	<0.001	2.008 (1.440–2.800)
LGA‡	0.079	1.980 (0.923–4.248)	0.060	2.360 (0.965–5.774)	0.001	1.447 (1.152–1.817)	<0.001	2.074 (1.484–2.900)	0.001	1.493 (1.171–1.905)	0.001	1.863 (1.303–2.663)
SGA‡	0.402	0.373 (0.037–3.747)	0.984	0 (0–0)	0.410	1.181 (0.795–1.753)	0.519	1.226 (0.659–2.282)	0.444	1.182 (0.770–1.815)	0.840	0.927 (0.443–1.939)

Adjusted by female age, type of infertility, duration of infertility, gravidity, parity, male BMI, male age, basal FSH, AFC, PCOS, tube factor,

endometriosis, uterine factor, ovarian stimulation protocol, stimulation duration, total gonadotropin dose, endometrial pattern, E₂, LH, and P on trigger day, number of oocytes retrieved, number of 2PN zygotes, number of transferable embryos, number of frozen embryos, number of embryos transferred in fresh cycle, day of embryos transfer in fresh cycle.

*PCOS was diagnosed according to Rotterdam criteria.

†In each subgroup (e.g., patients with PCOS), overweight and obesity groups were both calculated with reference of normal weight group.

‡Rates of LGA and SGA were both calculated with reference of the rate of appropriate for gestational age.

2PN: 2 pronuclear; AFC: Antral follicle count; BMI: Body mass index; FSH: Follicle-stimulating hormone; ICSI: Intra-cytoplasmic sperm injection; IVF: *In vitro* fertilization; LGA: Large for gestational age; PCOS: Polycystic ovary syndrome; SGA: Small for gestational age.