

Supplementary Materials

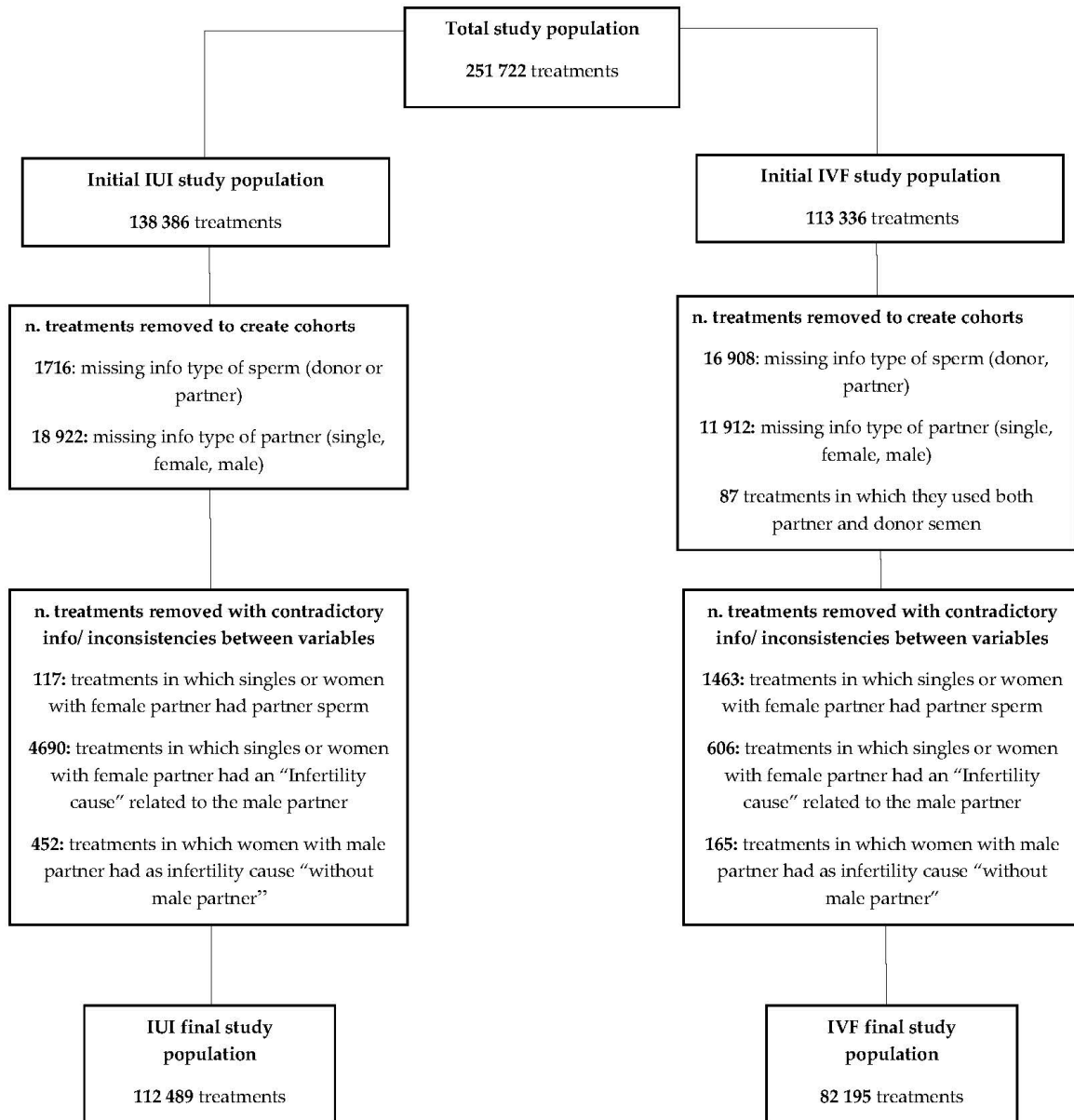


Figure S1. Flowchart illustrating the patient selection process.

Table S1. Sensitivity analyses performed by including one covariate at a time to assess the individual effect on the odds ratio (OR) result.

IUI Treatments			
Unexposed Cohort	Exposed Cohorts		
Treatments in women with male partners using partner semen	Treatments in women with male partners using donor sperm	Treatments in single women using donor sperm	Treatments in women with female partners using donor sperm
Crude OR (95% CI)	1.43 (1.34–1.52)	0.94 (0.90–0.99)	1.52 (1.40–1.66)
Single-covariate-adjusted OR (95% CI)			
Age at treatment	1.50 (1.41–1.60)	1.21 (1.14–1.27)	1.49 (1.37–1.63)
No. of treatments	1.40 (1.31–1.51)	0.97 (0.92–1.02)	1.58 (1.46–1.72)
BMI	1.40 (1.31–1.51)	0.93 (0.88–0.98)	1.48 (1.34–1.63)
Smoking at time of treatment	1.38 (1.28–1.48)	0.94 (0.89–1.00)	1.50 (1.36–1.65)
Alcohol consumed	1.38 (1.29–1.48)	0.94 (0.89–1.00)	1.49 (1.35–1.65)
Calendar year of treatment	1.43 (1.34–1.52)	0.94 (0.90–0.99)	1.53 (1.40–1.66)
Infertility diagnosis	1.43 (1.33–1.53)	1.08 (0.99–1.18)	1.75 (1.57–1.96)
IVF Treatments			
Treatments in women with male partners using partner sperm	Treatments in women with male partners using donor sperm	Treatments in single women using donor sperm	Treatments in women with female partners using donor sperm
Crude OR (95% CI)	1.03 (0.92–1.16)	0.60 (0.55–0.65)	1.16 (1.00–1.36)
Single-covariate-adjusted OR (95% CI)			
Age at treatment	1.13 (1.01–1.27)	0.92 (0.85–0.99)	1.24 (1.06–1.45)
No. of treatments	1.07 (0.96–1.19)	0.60 (0.56–0.65)	1.15 (0.99–1.34)
BMI	1.05 (0.92–1.18)	0.60 (0.55–0.66)	1.16 (0.97–1.39)
Smoking at time of treatment	1.04 (0.91–1.17)	0.60 (0.55–0.67)	1.22 (1.02–1.45)
Alcohol consumed	1.04 (0.92–1.18)	0.60 (0.55–0.66)	1.21 (1.02–1.45)
Calendar year of treatment	1.04 (0.92–1.16)	0.59 (0.55–0.64)	1.15 (0.99–1.35)
Type of treatment (fresh/frozen)	1.04 (0.93–1.16)	0.59 (0.55–0.64)	1.17 (1.00–1.37)
Infertility diagnosis	0.99 (0.88–1.11)	0.67 (0.59–0.77)	1.30 (1.07–1.57)

Table S2. Sensitivity analysis that included female infertility diagnosis.

IUI Treatments		
Exposed Cohorts	Live Births	
Treatments in women with male partners using donor sperm	Crude OR (95% CI)	1.43 (1.34–1.52)
	Adjusted OR ^a (95% CI)	1.46 (1.35–1.59)
Treatments in single women using donor sperm	Crude OR (95% CI)	0.94 (0.90–0.99)
	Adjusted OR ^a (95% CI)	1.36 (1.24–1.50)
Treatments in women with female partners using donor sperm	Crude OR (95% CI)	1.52 (1.40–1.66)
	Adjusted OR ^a (95% CI)	1.72 (1.51–1.95)
IVF Treatments		
Exposed Cohorts	Live Births	
Treatments in women with male partners using donor sperm	Crude OR (95% CI)	1.03 (0.92–1.16)
	Adjusted OR ^b (95% CI)	1.14 (1.00–1.29)
Treatments in single women using donor sperm	Crude OR (95% CI)	0.60 (0.55–0.65)
	Adjusted OR ^b (95% CI)	0.97 (0.85–1.12)
Treatments in women with female partners using donor sperm	Crude OR (95% CI)	1.16 (1.00–1.36)
	Adjusted OR ^b (95% CI)	1.37 (1.11–1.69)

a: adjusted for age at treatment, calendar year of treatment, BMI, smoking at the time of treatment, alcohol consumed, no. of treatments, and infertility diagnosis. b: adjusted for age at treatment, calendar year of treatment, BMI, smoking at the time of treatment, alcohol consumed, type of treatment, no. of treatments, and infertility diagnosis. The unexposed cohort used as a reference was treatments in women with male partners using partner sperm.

Table S3. Overview of male infertility diagnoses.

IUI Treatments				
Male infertility diagnosis, n (%)	Exposed Cohort		Unexposed Cohort	
	Women with a male partner using donor semen	Single women using donor semen	Women with a female partner using donor semen	Women with a male partner using partner semen
Aspermia	440 (5.01)			46 (0.06)
Azoospermia	3291 (37.48)			345 (0.43)
Oligozoospermia	1036 (11.80)			7607 (9.40)
Oligoteratozoospermia	1035 (11.79)			6333 (7.82)
Other reasons ^a	225 (2.56)			982 (1.21))
Unexplained	1359 (15.48)			33,286 (41.12)
Retrograde ejaculation	14 (0.16)			36 (0.04)
Normal quality	1380 (15.72)			32,314 (39.92)
IVF Treatments				
Male infertility diagnosis, n (%)	Exposed Cohort		Unexposed Cohort	
	Women with a male partner using donor semen	Single women using donor semen	Women with a female partner using donor semen	Women with a male partner using partner semen
Aspermia	109 (5.63)			120 (0.16)
Azoospermia	766 (39.55)			1556 (2.09)
Oligozoospermia	307 (15.85)			16,824 (22.61)
Oligoteratozoospermia	240 (12.39)			12,034 (16.17)
Other reasons ^a	61 (3.15)			1391 (1.87)
Unexplained	246 (12.70)			17,889 (24.04)
Retrograde ejaculation	9 (0.46)			45 (0.06)
Normal quality	199 (19.27)			24,566 (33.01)

a: other reasons included a diagnosis of previous sterility, infection with HIV, and missing data.

Table S4. Sensitivity analyses that included only male partners of women using partner sperm with good sperm quality or reduced sperm quality.

Good Sperm Quality		
IUI Treatments		
Exposed Cohorts		Live Births
Treatments in women with male partners using donor sperm	Yes, n (%)	1461 (16.64)
	No, n (%)	7319 (83.36)
	Crude OR (95% CI)	1.4 (1.3–1.50)
	Adjusted OR ^a (95% CI)	1.57 (1.45–1.70)
Treatments in single women using donor sperm	Yes, n (%)	2131 (11.66)
	No, n (%)	16 152 (88.34)
	Crude OR (95% CI)	0.92 (0.87–0.98)
	Adjusted OR ^a (95% CI)	1.25 (1.17–1.35)
Treatments in women with female partners using donor sperm	Yes, n (%)	787 (17.58)
	No, n (%)	3690 (82.42)

		Crude OR (95% CI)	1.49 (1.36–1.63)
		Adjusted OR ^a (95% CI)	1.49 (1.34–1.66)
Unexposed cohort			
Treatments in women with male partners using partner sperm	Yes, n (%)		4044 (12.51)
	No, n (%)		28 270 (87.49)
Good Sperm Quality IVF Treatments			
Exposed Cohorts		Live Births	
Treatments in women with male partners using donor sperm	Yes, n (%)		510 (26.33)
	No, n (%)		1427 (73.67)
	Crude OR (95% CI)		1.09 (0.97–1.23)
	Adjusted OR ^b (95% CI)		1.21 (1.06–1.38)
Treatments in single women using donor sperm	Yes, n (%)		862 (17.18)
	No, n (%)		4155 (82.82)
	Crude OR (95% CI)		0.63 (0.58–0.69)
	Adjusted OR ^b (95% CI)		0.92 (0.83–1.01)
Treatments in women with female partners using donor sperm	Yes, n (%)		234 (28.68)
	No, n (%)		582 (71.32)
	Crude OR (95% CI)		1.23 (1.05–1.43)
	Adjusted OR ^b (95% CI)		1.25 (1.04–1.50)
Unexposed cohort			
Treatments in women with male partners using partner sperm	Yes, n (%)		6063 (24.68)
	No, n (%)		18 503 (75.32)
Reduced Sperm Quality IUI Treatments			
Exposed Cohorts		Live Births	
Treatments in women with male partners using donor sperm	Yes, n (%)		1461 (16.64)
	No, n (%)		7319 (83.36)
	Crude OR (95% CI)		1.52 (1.41–1.65)
	Adjusted OR ^a (95% CI)		1.59 (1.45–1.74)
Treatments in single women using donor sperm	Yes, n (%)		2131 (11.66)
	No, n (%)		16 152 (88.34)
	Crude OR (95% CI)		
	Adjusted OR ^a (95% CI)		
Treatments in women with female partners using donor sperm	Yes, n (%)		787 (17.58)
	No, n (%)		3690 (82.42)
	Crude OR (95% CI)		1.01 (0.94–1.08)
	Adjusted OR ^a (95% CI)		1.29 (1.19–1.41)
Unexposed cohort			
Treatments in women with male partners using partner sperm	Yes, n (%)		1663 (11.58)
	No, n (%)		12704 (88.42)
Reduced Sperm Quality IVF Treatments			
Exposed Cohorts		Live Births	
Treatments in women with male partners using donor sperm	Yes, n (%)		510 (26.33)
	No, n (%)		1427 (73.67)
	Crude OR (95% CI)		0.95 (0.84–1.06)
	Adjusted OR ^b (95% CI)		1.10 (0.96–1.25)
Treatments in single women using donor sperm	Yes, n (%)		862 (17.18)
	No, n (%)		4155 (82.82)
	Crude OR (95% CI)		0.55 (0.51–0.60)

Treatments in women with female partners using donor sperm	Adjusted OR ^b (95% CI)	0.810 (0.74–0.89)
	Yes, n (%)	234 (28.68)
	No, n (%)	582 (71.32)
	Crude OR (95% CI)	1.06 (0.91–1.25)
Unexposed cohort		
Treatments in women with male partners using partner sperm	Yes, n (%)	8589 (27.31)
	No, n (%)	22 861 (72.69)

a: adjusted for age at treatment, calendar year of treatment, BMI, smoking at the time of treatment, alcohol consumed, and no. of treatments. b: adjusted for age at treatment, calendar year of treatment, BMI, smoking at the time of treatment, alcohol consumed, type of treatment, and no. of treatments.

Table S5. Crude and adjusted odds ratios (ORs) for biochemical pregnancy and clinical pregnancy in women with male partners using donor sperm, single women using donor sperm, women with female partners using donor sperm, and women with male partners using partner sperm in IUI and IVF treatments.

IUI Treatments			
Exposed Cohorts		Biochemical Pregnancy (hCG)	Clinical Pregnancy (Ultrasound)
Treatments in women with male partners using donor sperm (N = 8780)	Yes, n (%)	1816 (20.7)	1609 (88.6)
	No, n (%)	6254 (71.2)	150 (8.3)
	Missing, n (%)	710 (8.1)	57 (3.1)
	Crude OR (95% CI)	1.39 (1.30–1.48)	1.25 (1.04–1.51)
	Adjusted OR ^a (95% CI)	1.42 (1.33–1.52)	1.32 (1.07–1.62)
Treatments in single women using donor sperm (N = 18,283)	Yes, n (%)	2902 (15.9)	2410 (83.0)
	No, n (%)	13 555 (74.1)	263 (9.1)
	Missing, n (%)	1826 (10.0)	229 (7.9)
	Crude OR (95% CI)	1.02 (0.97–1.07)	1.07 (0.92–1.25)
	Adjusted OR ^a (95% CI)	1.21 (1.14–1.29)	1.37 (1.15–1.64)
Treatments in women with female partners using donor sperm (N = 4477)	Yes, n (%)	1002 (22.4)	717 (71.6)
	No, n (%)	3236 (72.3)	90 (9.0)
	Missing, n (%)	239 (5.3)	195 (19.5)
	Crude OR (95% CI)	1.48 (1.36–1.60)	0.93 (0.73–1.18)
	Adjusted OR ^a (95% CI)	1.48 (1.35–1.63)	1.08 (0.81–1.45)
Unexposed cohort			
Treatments in women with male partners using partner sperm (N = 80,949)	Yes, n (%)	12,130 (15.0)	10,674 (88.0)
	No, n (%)	57 889 (71.5)	1247 (10.3)
	Missing, n (%)	10 930 (13.5)	209 (1.7)
IVF Treatments			
Exposed Cohorts		Biochemical Pregnancy (hCG)	Clinical Pregnancy (Ultrasound)
Treatments in women with male partners using donor sperm (N = 1937)	Yes, n (%)	792 (40.9)	647 (81.7)
	No, n (%)	1132 (58.4)	139 (17.6)
	Missing, n (%)	183 (9.7)	6 (0.8)
	Crude OR (95% CI)	1.15 (1.04–1.27)	0.87 (0.71–1.07)
	Adjusted OR ^b (95% CI)	1.26 (1.12–1.41)	0.90 (0.71–1.13)
Treatments in single women using donor sperm (N = 5017)	Yes, n (%)	1581 (31.5)	1218 (77.0)
	No, n (%)	3431 (68.4)	352 (22.3)
	Missing, n (%)	5 (0.1)	11 (0.7)
	Crude OR (95% CI)	0.76 (0.71–0.81)	0.65 (0.57–0.74)
	Adjusted OR ^b (95% CI)	0.99 (0.92–1.07)	0.79 (0.68–0.91)

Treatments in women with female partners using donor sperm (N = 816)	Yes, n (%)	344 (42.2)	288 (83.7)
	No, n (%)	471 (57.7)	54 (15.7)
	Missing, n (%)	1 (0.12)	2 (0.6)
	Crude OR (95% CI)	1.20 (1.03–1.40)	1.00 (0.72–1.39)
	Adjusted OR ^b (95% CI)	1.19 (1.00–1.43)	1.27 (0.86–1.87)
Unexposed cohort			
Treatments in women with male partners using partner sperm (N = 74,425)	Yes, n (%)	27,707 (37.2)	22,998 (83.0)
	No, n (%)	45,566 (61.2)	4316 (15.6)
	Missing, n (%)	1152 (1.6)	393 (1.4)

a: adjusted for age at treatment, calendar year of treatment, BMI, smoking at the time of treatment, alcohol consumed, and no. of treatments. b: adjusted for age at treatment, calendar year of treatment, BMI, smoking at the time of treatment, alcohol consumed, type of treatment, and no. of treatments. The analysis of the clinical pregnancy was based only on those women who had a positive biochemical pregnancy.