Bilaga till rapport

Undersökning av kromosomavvikelser i embryot vid assisterad befruktning/Effectiveness, complications and health economic and ethical aspects of preimplantation genetic testing for aneuploidy (PGT-A) during *in vitro* fertilisation (IVF) report 393 (2025)

Appendix 5 Characteristics of included studies

Effect studies

Munne et al. 2019

Author	*Munne et al.*
Year	*2019*
Country	*United States, Canada, United Kingdom, Australia*
Reference	*[1]*
Study design	*RCT*
Setting	*Multi centre (34)*
Time of randomization	*Day 4 to 6 after fertilization*
Inclusion criteria	*At least 2 blastocysts*
Previous failed IVF	*Max 2 for inclusion*
Donated eggs	*No*
ICSI (%)	*I: 88.8% C: 87%*
Day of ET	*Not stated*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with PGT-A***
Participants (n)	*330*
Drop-outs (n)	*56 (withdrawal, thaw failure, protocol deviation, no euploid embryo)*
Participants that had an ET (n)	*274*
Age of mother	*Mean ± SD: 33.7 ±3.6* *Median (range): 34.0(25-40)*
Embryos per transfer	*1 embryo/ET*
Day/stage of biopsy	*Day 5/6 (blastocyst)*
Method of genetic analysis	*NGS based assay*
ET if mosaic embryo	*No*
Control	***IVF without PGT-A***
Participants (n)	*331*
Drop-outs (n)	*18 (withdrawal, thaw failure)*
Participants that had an ET (n)	*313*
Age of mother	*Mean ± SD: 33.8 ±3.6* *Median (range): 34.0 (25-40)*

Embryos per transfer	*1 embryo/ET*
Outcomes included	*Deliveries at first planned embryo transfer (ET)* *Deliveries at first ET* *Pregnancies at first planned ET* *Pregnancies at first ET* *Miscarriage at first ET*

I = intervention; **C** = control; **ET** = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **NGS** = next-generation sequencing; **PGT- A** = preimplantation genetic testing for aneuploidy; **RCT** = randomized controlled trial; **SD** = standard deviation

Ozgur et al. 2019

Author	*Ozgur et al.*
Year	*2019*
Country	*Turkey*
Reference	*[2]*
Study design	*RCT*
Setting	*Single centre*
Time of randomization	*Day 5 after fertilization*
Inclusion criteria	*At least 2 blastocysts*
Previous failed IVF	*Previous embryo transfer I: 14.7% C: 13.5%*
Donated eggs	*No*
ICSI (%)	*100%*
Day of ET	*Blastocyst stage*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with PGT-A***
Participants (n)	*109*
Drop-outs (n)	*6 (no euploid embryo, got two embryos violating inclusion criteria)*
Participants that had an ET (n)	*103*
Age of mother	*Mean ± SD: 28.5 ±3.7* *Median (range): 28.5 (24.4–31.6)*
Embryos per transfer	*1 embryo/ET*
Day/stage of biopsy	*Day 5 (blastocyst)*
Method of genetic analysis	*NGS based assay*
ET if mosaic embryo	*No*
Control	***IVF without PGT-A***
Participants (n)	*220*
Drop-outs (n)	*0*
Participants that had an ET (n)	*111*
Age of mother	*Mean ±SD: 28.3 ±3.2* *Median (range): 29.0 (25.9–30.7)*
Embryos per transfer	*1 embryo/ET*
Outcomes included	*Deliveries at first planned embryo transfer (ET)* *Deliveries at first ET* *Pregnancies at first planned ET* *Pregnancies at first ET* *Miscarriage at first ET*

I = intervention; **C** = control; **ET** = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **NGS** = next-generation sequencing; **PGT- A** = preimplantation genetic testing for aneuploidy; **RCT** = randomized controlled trial; **SD** = standard deviation

Rubio et al. 2017

Author	*Rubio et al.*
Year	*2017*
Country	*Spain*
Reference	*[3]*
Study design	*RCT*
Setting	*Multi centre (4)*
Time of randomization	*Pre-treatment*
Inclusion criteria	*At least 5 metaphase II (MII) oocytes*
Previous failed IVF	*I: 0.2±0.4 C: 0.2±0.4*
Donated eggs	*No*
ICSI (%)	*100%*
Day of ET	*Blastocyst stage*
Fresh/frozen ET	*Fresh at first ET, % frozen of all ET:s: I: 1.4% C:26.9%*
Intervention	***IVF with PGT-A***
Participants (n)	*138*
Drop-outs (n)	*38 (spontaneous pregnancy, not fulfilling inclusion criteria, previous recurrent miscarriages, recurrent implantation failure).*
Participants that had an ET (n)	*1st attempt: 68* *Total number of ET:s: 69*
Age of mother	*Mean ±SD: 39.1±1.1*
Embryos per transfer	*Mean ± SD: 1.3 ±0.5 embryo/ET*
Day/stage of biopsy	*Day 3*
Method of genetic analysis	*aCGH*
ET if mosaic embryo	*Not analysed*
Control	***IVF without PGT-A***
Participants (n)	*140*
Drop-outs (n)	*35 (spontaneous pregnancy, not fulfilling inclusion criteria, recurrent implantation failure)*
Participants that had an ET (n)	*1st attempt: 95* *Total number of ET:s: 130*
Age of mother	*Mean ± SD: 39.5±1.0*
Embryos per transfer	*Mean ± SD: 1.8 ±0.4 embryo/ET*
Outcomes included	*Deliveries per oocyte retrieval (cumulative)* *Deliveries at first planned embryo transfer (ET)* *Deliveries at first ET* *Pregnancies at first planned ET* *Pregnancies at first ET* *Miscarriage at first ET* *Ectopic pregnancy*

aCGH = array comparative genomic hybridisation; **I** = intervention; **C** = control; **ET** = embryo transfer**; ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization**; PGT-A** = preimplantation genetic testing for aneuploidy; **RCT** = randomized controlled trial**; SD** = standard deviation

Scott et al. 2013

Author	*Scott et al.*
Year	*2013*
Country	*USA*
Reference	*[4]*
Study design	*RCT*
Setting	*Single centre*
Time of randomization	*Day 5 after fertilization*
Inclusion criteria	*At least 2 blastocysts*
Previous failed IVF	*I: 0.3±0.03 C: 0.32±0.03*
Donated eggs	*I: 4.2% C: 6%*
ICSI (%)	*100%*
Day of ET	*Blastocyst stage day 5 or 6*
Fresh/frozen ET	*Fresh*
Intervention	***IVF with PGT-A***
Participants (n)	*72*
Drop-outs (n)	*0*
Participants that had an ET (n)	*72*
Age of mother	*Mean ± SE: 32.2±0.5*
Embryos per transfer	*Mean ± SE: 1.9 ±0.0 embryo/ET*
Day/stage of biopsy	*Day 5*
Method of genetic analysis	*q-PCR based CCS*
ET if mosaic embryo	*Not stated*
Control	***IVF without PGT-A***
Participants (n)	*83*
Drop-outs (n)	*0*
Participants that had an ET (n)	*83*
Age of mother	*Mean ± SE: 32.4±0.5*
Embryos per transfer	*Mean ± SE: 2.0 ±0.0 embryo/ET*
Outcomes included	*Deliveries at first planned embryo transfer (ET)* *Deliveries at first ET* *Pregnancies at first planned ET* *Pregnancies at first ET*

I = intervention; **C** = control; **ET** = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT-A** = preimplantation genetic testing for aneuploidy; ***q-PCR based CCS*** = quantitative real-time polymerase chain reaction based comprehensive chromosome screening; **RCT** = randomized controlled trial; **SE** = standard error

Verpoest et al. 2018

Author	*Verpoest et al.*
Year	*2018*
Country	*7 countries in Europe*
Reference	*[5]*
Study design	*RCT*
Setting	*Multi centre (9)*
Time of randomization	*Before biopsy*
Inclusion criteria	*Max 2 previous failed IVF*
Previous failed IVF	*% number of no previous IVF: I: 58% C: 58%*
Donated eggs	*No*
ICSI (%)	*100%*
Day of ET	*Up to day 5 but same in both groups*
Fresh/frozen ET	*Fresh at first ET, % frozen of all ET:s: I: 14% C: 30%*
Intervention	***IVF with PGT-A***
Participants (n)	*205*
Drop-outs (n)	*8 (withdrew, clinical decision)*
Participants that had an ET (n)	*At least one ET: 149* *Total number of ET:s: 177*
Age of mother	*Mean ± SD: 38.6±1.4*
Embryos per transfer	*% who got 1 embryo per transfer: 59% (the rest got 2 embryos per transfer)*
Day/stage of biopsy	*Polar body biopsy*
Method of genetic analysis	*aCGH*
ET if mosaic embryo	*Not analysed*
Control	***IVF without PGT-A***
Participants (n)	*191*
Drop-outs (n)	*7 (withdrew, clinical decision, spontaneous pregnancy)*
Participants that had an ET (n)	*At least one ET: 171* *Total number of ET:s: 249*
Age of mother	*Mean ± SD: 38.6±1.4*
Embryos per transfer	*% who got 1 embryo per transfer: 23% (the rest got 2 embryos per transfer)*
Outcomes included	*Deliveries per oocyte retrieval (cumulative)* *Deliveries at first planned embryo transfer (ET)* *Deliveries at first ET* *Pregnancies at first planned ET* *Pregnancies at first ET* *Miscarriage at first ET* *Time to pregnancy*

aCGH = array comparative genomic hybridisation; **I** = intervention; **C** = control; **ET** = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT-A** = Preimplantation genetic testing for aneuploidy; **RCT** = randomized controlled trial; **SD** = standard deviation

Wang et al. 2022

Author	*Wang et al.*
Year	*2022*
Country	*China*
Reference	*[6]*
Study design	*RCT*
Setting	*Multi center (13)*
Time of randomization	*After biopsy*
Inclusion criteria	*Not stated*
Previous failed IVF	*Not stated*
Donated eggs	*Not stated*
ICSI (%)	*Not stated*
Day of ET	*Blastocyst stage*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with PGT-A***
Participants (n)	*282*
Drop-outs (n)	*32 (withdrew, no transfer)*
Participants that had an ET (n)	*Assumed to be 224 (excluding those that had no transfer and those that did not have any euploid embryos) but could also be 250*
Age of mother	*No mean or median, age was presented in age distribution:* *<32y: 40%* *32-34y: 25%* *35-38y: 23%* *>38y: 12%*
Embryos per transfer	*Supposed to be 1 embryo per transfer, but 26 patients had 2 embryos transferred*
Day/stage of biopsy	*Day 5/6 blastocysts, biopsy in both groups*
Method of genetic analysis	*NGS (Illumina NextSeq 500CN)*
ET if mosaic embryo	*No*
Control	***IVF without PGT-A***
Participants (n)	*238*
Drop-outs (n)	*22 (withdrew, no transfer)*
Participants that had an ET (n)	*216*
Age of mother	*No mean or median, age was presented in age distribution:* *<32y: 38%* *32-34y: 28%* *35-38y: 24%* *>38y: 10%*
Embryos per transfer	*Supposed to be 1 embryo per transfer, but 19 patients had 2 embryos transferred*
Outcomes included	*Deliveries at first planned embryo transfer (ET)* *Deliveries at first ET* *Pregnancies at first planned ET* *Pregnancies at first ET*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **NGS** = next-generation sequencing; **PGT-A** = Preimplantation genetic testing for aneuploidy; **RCT** = randomized controlled trial; **y** = years

Yan et al. 2021

Author	*Yan et al.*
Year	*2021*
Country	*China*
Reference	*[7, 8]*
Study design	*RCT*
Setting	*Multi center (14)*
Time of randomization	*Day 5 after fertilization*
Inclusion criteria	*At least 3 blastocysts*
Previous failed IVF	*No previous IVF attempts*
Donated eggs	*No*
ICSI (%)	*100%*
Day of ET	*Not stated*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with PGT-A***
Participants (n)	*606*
Drop-outs (n)	*29 (withdrawal, spontaneous pregnancy, included by mistake, protocol deviation, mosaic embryos transferred)*
Participants that had an ET (n)	*1st ET: 576* *2nd ET: 119* *3rd ET: 5*
Age of mother	*Mean ± SD: 29.1±3.6*
Embryos per transfer	*Supposed to be 1 embryo per transfer, but 5 patients had 2 embryos transferred*
Day/stage of biopsy	*Day 5 blastocysts*
Method of genetic analysis	*NGS (Illumina NextSeq 550 or Ion PGM/Proton)*
ET if mosaic embryo	*No in general but 6 embryos were transferred anyway*
Control	***IVF without PGT-A***
Participants (n)	*606*
Drop-outs (n)	*41 (withdrawal, spontaneous pregnancy, included by mistake, protocol deviation, lost to follow-up, mosaic embryos transferred)*
Participants that had an ET (n)	*1st ET: 594* *2nd ET: 192* *3rd ET: 49*
Age of mother	*Mean ± SD: 29.2±3.5*
Embryos per transfer	*Supposed to be 1 embryo per transfer, but 15 patients had 2 embryos transferred*
Outcomes included	*Deliveries per oocyte retrieval (cumulative)* *Deliveries at first planned embryo transfer (ET)* *Deliveries at first ET* *Pregnancies at first planned ET* *Pregnancies at first ET* *Miscarriage at first ET* *Ectopic pregnancy*

	Time to pregnancy

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **NGS** = next-generation sequencing; **PGT-A** = preimplantation genetic testing for aneuploidy; **RCT** = randomized controlled trial; **SD** = standard deviation

Complication studies

Awadalla et al. 2021

Author	*Awadalla et al.*
Year	*2021*
Country	*USA*
Reference	*[9]*
Study design	*Retrospective cohort study*
Setting	*Single centre*
Donated eggs	*No*
ICSI (%)	*I: 100% C: 87%*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*78 singleton live births*
Age of mother (years)	*Mean± SD: 35.8±3.7*
Parity	*Not stated*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*Not stated*
Control	***IVF without biopsy***
Participants (n)	*67 singleton live births*
Age of mother (years)	*Mean± SD: 35.6±4.3*
Parity	*Not stated*

C = control; **ET** = embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **SD** = standard deviation

Belva et al. 2018

Author	*Belva et al.*
Year	*2018*
Country	*Belgium*
Reference	*[10]*
Study design	*Prospective cohort study*
Setting	*Single centre*
Donated eggs	*Not stated*
ICSI (%)	*100%*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Fresh*
Intervention	***IVF with biopsy***
Participants (n)	*87 singleton live births*
Age of mother (years)	*Mean ± SD: 30.5±3.3*
Parity	*56% firstborn*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*PGT-M: n=70* *PGT-SR: n=17*
Control	***IVF without biopsy***
Participants (n)	*87 singleton live births*
Age of mother (years)	*Mean ± SD: 31.3±3.5*
Parity	*64% firstborn*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = i*n vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-M** = pre-implantation genetic testing for monogenic disorder; **PGT-SR** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation

Belva et al. 2023

Author	*Belva et al.*
Year	*2023*
Country	*Belgium*
Reference	*[11]*
Study design	*Retrospective cohort study*
Setting	*Single centre*
Donated eggs	*No*
ICSI (%)	*100%*
Day/stage of ET	*Not stated*
Fresh/frozen ET	*Divided in 5 groups* *Fresh ET: Intervention group EBD3 FRESH, Control group FRESH* *Frozen ET: Intervention groups EBD5 FET and EBD3 FET, Control group: FET*
Intervention	***IVF with biopsy***
Participants (n)	*852 singletons live born with data at birth* *EBD5 FET: 222* *EBD3 FET: 322* *EBD3 FRESH: 308*
Age of mother (years)	*Mean ±SD in each group:* *EBD5 FET: 34.2 ±4.7* *EBD3 FET: 31.7±3.6* *EBD3 FRESH: 31.8±3.5*
Parity	*nulliparous, %:* *EBD5 FET: 63.9%* *EBD3 FET:58.4%* *EBD3 FRESH:63.5%*
Day/stage of biopsy	*Cleavage stage (EBD3)* *Blastocyst (EBD5)*
Types of PGT included	*PGT-M, PGT-SR and PGT-A*
Control	***IVF without biopsy***
Participants (n)	*1 532 singletons live born with data at birth* *FET: 751* *FRESH: 781*
Age of mother (years)	*Mean ±SD in each group:* *FET: 32.9±3.9* *FRESH: 31.8±3.9*
Parity	*nulliparous, %:* *FET: 31.9%* *FRESH: 23.1%*

EBD3=embryo biopsy day 3; **EBD5**=embryo biopsy day 5; **ET** = embryo transfer; **FET**=frozen embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = i*n vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT- A** = preimplantation genetic testing for aneuploidy; **PGT-M** = pre-implantation genetic testing for monogenic disorders ; **PGT-SR** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation

Cozzolino et al. 2023

Author	*Cozzolino et al.*
Year	*2023*
Country	*Spain*
Reference	*[12]*
Study design	*Retrospective cohort study*
Setting	*Multi center*
Donated eggs	*No*
ICSI (%)	*100%*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*I: Frozen 100%*
	C: Both
Intervention	***IVF with biopsy***
Participants (n)	*3 850 singleton live births*
Age of mother (years)	*Mean±SD: 39.13 ± 3.15*
Parity	*Not stated*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-A*
Control	***IVF without biopsy***
Participants (n)	*3 296 Singleton live births*
Age of mother (years)	*Mean±SD: 36.12 ± 3.42*
Parity	*Not stated*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **SD** = standard deviation

Desmyttere et al. 2009

Author	*Desmyttere et al.*
Year	*2009*
Country	*Belgium*
Reference	*[13]*
Study design	*Prospective cohort study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*Not stated*
Day/stage of ET	*Not stated*
Fresh/frozen ET	*Not stated*
Intervention	***IVF with biopsy***
Participants (n)	*70 singleton live births*
Age of mother (years)	*Mean±SD: 34.2 ±4.6*
Parity	*Firstborn yes/no (n) 49/21*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*PGD/PGS* *(28 PGD and 42 PGS)*
Control	***IVF without biopsy***
Participants (n)	*70 singleton live births*
Age of mother (years)	*Mean±SD: 33.6 ±4.0*
Parity	*Firstborn yes/no (n) 49/21*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGD** = preimplantation genetic diagnosis (PGT-M or PGT-SR); **PGS** = preimplantation genetic screening (PGT-A); **SD** = standard deviation

Desmyttere et al. 2012

Author	*Desmyttere et al.*
Year	*2012*
Country	*Belgium*
Reference	*[14]*
Study design	*Prospective cohort study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*100%*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Not stated*
Intervention	***IVF with biopsy***
Participants (n)	*678 singleton births*
Age of mother (years)	*Mean±SD: 33.2±4.6*
Parity	*Firstborn yes/no (%) 75/25*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*Not stated but probably all*
Control	***IVF without biopsy***
Participants (n)	*1 078 singleton births*
Age of mother (years)	*Mean±SD: 32.0±4.2*
Parity	*Parity yes/no (%) 66/34*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **SD** = standard deviation

DeVos et al. 2009

Author	*DeVos et al.*
Year	*2009*
Country	*Belgium*
Reference	*[15]*
Study design	*Prospective cohort study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*Intervention: Group 1 (1 cell biopsy): 2.4% IVF, Group 2 (2 cell biopsy): 100% ICSI* *Control: 100% ICSI*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Not stated*
Intervention	***IVF with biopsy***
Participants (n)	*126 live born* *Group 1: 68* *Group 2: 58*
Age of mother (years)	*Mean±SD:* *Group 1: 32.7 ± 5.6* *Group 2: 32.6 ± 4.7*
Parity	*Not stated*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*PGT-M* *PGT-SR* *PGT-A*
Control	***IVF without biopsy***
Participants (n)	*246 live born*
Age of mother (years)	*Mean±SD: 30.0 ± 3.7*
Parity	*Not stated*

ET = embryo transfer; **ICSI =** intracytoplasmic sperm injection; **IVF =** *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **PGT-M** = pre-implantation genetic testing for monogenic disorders; **PGT-SR** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation

Eldar-Geva et al.2014

Author	*Eldar-Geva et al.*
Year	*2014*
Country	*Israel*
Reference	*[16]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*I: Not stated* *C: ICSI*
Day/stage of ET	*Not stated*
Fresh/frozen ET	*I: Frozen: 16.5%* *C: Frozen: 29.1%*
Intervention	***IVF with biopsy***
Participants (n)	*158 singleton live births*
Age of mother (years)	*Mean±SD: 30.5 ± 4.1*
Parity	*Nulliparous 32%*
Day/stage of biopsy	*Polar body biopsy 25.3%* *Cleavage stage 75.2%* *Both 2.5%*
Types of PGT included	*Not stated*
Control	***IVF without biopsy***
Participants (n)	*158 singleton live births*
Age of mother (years)	*Mean±SD: 30.5 ± 4.7*
Parity	*Nulliparous 32%*

C = control; **ET =** embryo transfer; **I =** intervention; **ICSI =** intracytoplasmic sperm injection**; IVF =** *in vitro* fertilization; **PGT** = preimplantation genetic testing; **SD** = standard deviation

El-Toukhy et al. 2009

Author	*El-Toukhy et al.*
Year	*2009*
Country	*United Kingdom*
Reference	*[17]*
Study design	*Prospective cohort study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*I: Not stated* *C: ICSI*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Both*
Intervention	***IVF with biopsy***
Participants (n)	*11 Ongoing pregnancies*
Age of mother (years)	*Mean±SD: 30.5 ± 4.1*
Parity	*Not stated*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*PGT-M* *PGT-SR*
Control	***IVF without biopsy***
Participants (n)	*65 Ongoing pregnancies*
Age of mother (years)	*Mean±SD: 30.5 ± 4.7*
Parity	*Not stated*

C = control; **ET** = embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection**; IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-M** = pre-implantation genetic testing for monogenic disorders; **PGT- SR** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation

Feldman et al. 2020

Author	*Feldman et al.*
Year	*2020*
Country	*Israel*
Reference	*[18]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*I: ICSI: 53% of all pregnancies* *C: Not stated*
Day/stage of ET	*Cleavage stage*
Fresh/frozen ET	*I: Fresh: 56.1% of all pregnancies* *C: Both*
Intervention	***IVF with biopsy***
Participants (n)	*345 singleton live births*
Age of mother (years)	*Median (IQR): 32 (30, 35)*
Parity	*Nulliparous 46.6%*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*PGT-M*
Control	***IVF without biopsy***
Participants (n)	*422 singleton live births*
Age of mother (years)	*Median (IQR): 35 (32, 40)*
Parity	*Nulliparous 53.7%*

C = control; **ET** = embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection**; IQR =** interquartile range; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-M** = pre-implantation genetic testing for monogenic disorders

Forman et al. 2012

Author	*Forman et al.*
Year	*2012*
Country	*USA*
Reference	*[19]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*I: ICSI* *C: Not stated*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Both*
Intervention	***IVF with biopsy***
Participants (n)	*49 deliveries (to date of publication)*
Age of mother (years)	*Mean±SD: 34.2±3.9*
Parity	*Parity, mean±SD 0.7±0.7*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-A*
Control	***IVF without biopsy***
Participants (n)	*63 deliveries (to date of publication)*
Age of mother (years)	*Mean±SD: 37.3±3.4*
Parity	*Parity, mean±SD 0.7±0.9*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **SD** = standard deviation

Ginstrom Ernstad et al. 2023

Author	*Ginstrom Ernstad et al.*
Year	*2023*
Country	*Sweden*
Reference	*[20]*
Study design	*Retrospective register study*
Setting	*National register*
Donated eggs	*No*
ICSI (%)	*I: 86.4% ICSI* *C: 46.1% ICSI*
Day/stage of ET	*Cleavage stage and Blastocyst stage* *I: Day 2-3= 2.1%, day 4= 47.4%, day 5-6= 50%, missing information= 0.5%* *C: Day 2-3= 59.1%, day 4= 0.3%, day 5-6= 25.3%, day 7 = 0.3%, missing information= 15.3%*
Fresh/frozen ET	*I: Fresh: 66.2%, frozen: 33.8%* *C: Fresh: 70.5%, frozen: 29.5%*
Intervention	***IVF with biopsy***
Participants (n)	*390 singleton births*
Age of mother (years)	*Mean±SD: 33.2±3.5*
Parity	*Nulliparous 40.0%*
Day/stage of biopsy	*Day 3 or Day 5-6*
Types of PGT included	*PGT-M* *PGT-SR*
Control	***IVF without biopsy***
Participants (n)	*61 060 singleton births*
Age of mother (years)	*Mean±SD: 33.8±4.2*
Parity	*Nulliparous 67.8%*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-M** = pre-implantation genetic testing for monogenic disorders; **PGT-SR** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation

Gulersen et al. 2021

Author	*Gulersen et al*
Year	*2021*
Country	*USA*
Reference	*[21]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*I: 5%* *C: 13.9%*
ICSI (%)	*100%*
Day/stage of ET	*I: Not stated* *C: 3-5 days after oocyte retrieval*
Fresh/frozen ET	*I: Fresh: 2.8%* *C: Fresh: 36.3%*
Intervention	***IVF with biopsy***
Participants (n)	*496 singleton live births*
Age of mother (years)	*Mean±SD: 36.2 ±4.4*
Parity	*Nulliparous 56.7%*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-A* *PGT-SR* *PGT-M*
Control	***IVF without biopsy***
Participants (n)	*519 singleton live births*
Age of mother (years)	*Mean±SD: 36.0 ±4.7*
Parity	*Nulliparous 57.0%*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **PGT- M** = pre- implantation genetic testing for monogenic disorders; **PGT-SR** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation

Gulersen et al. 2022

Author	*Gulersen et al*
Year	*2022*
Country	*USA*
Reference	*[22]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*I: 4.8 %* *C: 16.1%*
ICSI (%)	*100%*
Day/stage of ET	*I: Blastocyst* *C: Cleavage stage or blastocyst*
Fresh/frozen ET	*Both*
Intervention	***IVF with biopsy***
Participants (n)	*208 singleton pregnancies*
Age of mother (years)	*Oocyte age, mean±SD: 35.9±4.5*
Parity	*Nulliparous 58.7%*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-A*
Control	***IVF without biopsy***
Participants (n)	*211 singleton pregnancies*
Age of mother (years)	*Oocyte age, mean±SD: 33.6 ±4.8*
Parity	*Nulliparous 57.3%*

C = control; **ET** = embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **SD** = standard deviation

Hao et al. 2022

Author	*Hao et al.*
Year	*2022*
Country	*China*
Reference	*[23]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*100%*
Day/stage of ET	*Blastocyst stage* *I: Day 5: 93.9%, day 6 or 7: 6.7%* *C: Day 5: 93.1%, day 6 or 7: 6.9%*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*989 clinical pregnancies and 835 singleton live births*
Age of mother (years)	*Mean ± SD: 31.8±4.3*
Parity	*Nulliparous: 91.1%*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-M n=76* *PGT-SR n=415* *PGT-A n=344*
Control	***IVF without biopsy***
Participants (n)	*1 352 clinical pregnancies and 1 063 singleton live births*
Age of mother (years)	*Mean ± SD: 32.7 ±4.5*
Parity	*Nulliparous: 93.0%*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **PGT- M** = pre- implantation genetic testing for monogenic disorders; **PGT- SR** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation

Hasson et al. 2017

Author	*Hasson et al.*
Year	*2017*
Country	*Israel*
Reference	*[24]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*100%*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Fresh*
Intervention	***IVF with biopsy***
Participants (n)	*51 singleton live births*
Age of mother (years)	*Mean ± SD: 31.7 ± 5*
Parity	*Parity (mean ±SD): 1.1 ± 1.1*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*PGT-M* *PGT-SR*
Control	***IVF without biopsy***
Participants (n)	*83 singleton live births*
Age of mother (years)	*Mean ± SD: 31.8± 4.8*
Parity	*Parity (mean ±SD): 0.4 ± 0.6*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-M** = pre-implantation genetic testing for monogenic disorders; **PGT-SR** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation

He et al. 2019

Author	*He et al.*
Year	*2019*
Country	*China*
Reference	*[25]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*Both*
Day/stage of ET	*Not stated*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*646 singleton live births*
Age of mother (years)	*Mean ± SD: 30.3±4.3*
Parity	*Not stated*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*Not stated*
Control	***IVF without biopsy***
Participants (n)	*612 singleton live births*
Age of mother (years)	*Mean ± SD: 31.3±4.2*
Parity	*Not stated*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **SD** = standard deviation;

Ji et al. 2023

Author	*Ji et al.*
Year	*2023*
Country	*China*
Reference	*[26]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*I: ICSI* *C: IVF/ICSI*
Day/stage of ET	*Blastocyst stage* *I: Day 5: 55.8%, day 6: 44.2%* *C: Day 5: 61.8%, day 6: 38.2*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*215 singleton live births*
Age of mother (years)	*Mean ± SD: 31.1 ±4.3*
Parity	*Nulliparous: 76.7%*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-A 61.9%* *PGT-SR 32.6%* *PGT-M 5.6%*
Control	***IVF without biopsy***
Participants (n)	*385 singleton live births*
Age of mother (years)	*Mean ± SD: 31.1±3.8*
Parity	*Nulliparous: 78.2%*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection**; IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **PGT-M** = pre-implantation genetic testing for monogenic disorders; **PGT-SR** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation

Kamath et al. 2020

Author	*Kamath et al.*
Year	*2020*
Country	*United Kingdom*
Reference	*[27]*
Study design	*Retrospective register study*
Setting	*National register*
Donated eggs	*No*
ICSI (%)	*I: IVF: 12.5%, ICSI: 70.6%* *C: IVF: 38.4%, ICSI: 43.3%*
Day/stage of ET	*I: Cleavage stage 57.0%, Blastocyst 43.0%, Unknown 0.1%* *C: Cleavage stage 64.5%, Blastocyst 35.5%, Unknown 0%*
Fresh/frozen ET	*I: Fresh: 56.1%, Frozen: 43.9%* *C: Fresh: 71.1%, Frozen: 29.0%*
Intervention	***IVF with biopsy***
Participants (n)	*1 448 live births after SET*
Age of mother (years)	*18-34 years 46.2%* *35–37 years 22.5%* *38–39 years 12.9%* *40–42 years 13.4%* *43–44 years 4.0%* *≥45 years 1.0%*
Parity	*Previous live birth: 14.5%*
Day/stage of biopsy	*Not stated*
Types of PGT included	*Not stated*
Control	***IVF without biopsy***
Participants (n)	*54 646 live births after SET*
Age of mother (years)	*18–34 years 51.2%* *35–37 years 24.2%* *38–39 years 12.7%* *40–42 years 9.1%* *43–44 years 2.1%* *≥45 years 0.7%*
Parity	*Previous live birth: 14.7%*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **SET** = single embryo transfer

Kato et al. 2023

Author	*Kato et al.*
Year	*2023*
Country	*Japan*
Reference	*[28]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*Not stated*
Day/stage of ET	*Not stated*
Fresh/frozen ET	*I: Frozen: 57.7%* *C: Frozen: 66.3%*
Intervention	***IVF with biopsy***
Participants (n)	*9 live births after SET*
Age of mother (years)	*Mean±SD: 38.6 ± 0.4*
Parity	*Not stated*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-A*
Control	***IVF without biopsy***
Participants (n)	*13 live births after SET*
Age of mother (years)	*Mean±SD: 38.5 ± 0.9*
Parity	*Not stated*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **SD** = standard deviation; **SET** = single embryo transfer

Kato et al. 2023

Author	*Kato et al.*
Year	*2023*
Country	*Japan*
Reference	*[29]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*I: Probably ICSI* *C: ICSI*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*113 RIF and 95 RPL live births after SET*
Age of mother (years)	*Not stated but comparable between groups*
Parity	*Not stated*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-A*
Control	***IVF without biopsy***
Participants (n)	*82 RIF and 69 RPL live births after SET*
Age of mother (years)	*Not stated but comparable between groups*
Parity	*Not stated*

C = control; **ET =** embryo transfer; **I =** intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **RPL** = reccurent pregnancy loss; **SET** = single embryo transfer

Lewis et al. 2021

Author	*Lewis et al.*
Year	*2021*
Country	*Australia*
Reference	*[30]*
Study design	*Retrospective cohort study*
Setting	*Multi center*
Donated eggs	*No*
ICSI (%)	*I: 84% ICSI* *C: 87% ICSI*
Day/stage of ET	*Cleavage stage or blastocyst stage*
Fresh/frozen ET	*I: Fresh: 93%, Frozen: 7%* *C: Fresh: 94%, Frozen :7%*
Intervention	***IVF with biopsy***
Participants (n)	*100 singleton live births*
Age of mother (years)	*Mean ±SD: 36.7±3.8*
Parity	*Not stated*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*PGT*
Control	***IVF without biopsy***
Participants (n)	*213 singleton live births*
Age of mother (years)	*Mean ±SD: 37.0 ±5.4*
Parity	*Not stated*

C = control; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **RIF** = recurrent implantation failure; **RPL** = recurrent pregnancy loss; **SD** = standard **SET** = single embryo transfer

Li et al. 2021

Author	*Li et al.*
Year	*2021*
Country	*USA*
Reference	*[31]*
Study design	*Retrospective register study*
Setting	*Register*
Donated eggs	*No*
ICSI (%)	*Not stated*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*6 244 singleton live births*
Age of mother (years)	*Mean ±SD: 35.8 ± 4.1*
Parity	*No prior full-term birth: 67.3%*
Day/stage of biopsy	*Not stated*
Types of PGT included	*PGT-M* *PGT-SR* *PGT-A*
Control	***IVF without biopsy***
Participants (n)	*1 002 singleton live births*
Age of mother (years)	*Mean ±SD: 33.7 ± 3.9*
Parity	*No prior full-term birth: 60.2%*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **PGT-M** = pre-implantation genetic testing for monogenic disorders; **PGT- SR** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation

Li et al. 2022

Author	*Li et al.*
Year	*2022*
Country	*China*
Reference	*[32]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*I: ICSI* *C: Not stated*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*1 853 singleton live births*
Age of mother (years)	*Median (IQR): 33(30-37)*
Parity	*Not stated*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-M* *PGT-SR* *PGT-A*
Control	***IVF without biopsy***
Participants (n)	*3 006 singleton live births*
Age of mother (years)	*Median (IQR): 32(29-35)*
Parity	*Not stated*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IQR =** Interquartile range; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **PGT-M** = pre-implantation genetic testing for monogenic disorders; **PGT-SR** = preimplantation genetic testing for structural rearrangements

Li et al. 2022

Author	*Li et al.*
Year	*2022*
Country	*China*
Reference	*[33]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*100%*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*1 088 singleton live births*
Age of mother (years)	*Median (quartile deviation): 31 (3.5)*
Parity	*Nulliparous 72.2%*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT*
Control	***IVF without biopsy***
Participants (n)	*4 324 singleton live births*
Age of mother (years)	*Median (quartile deviation): 30 (3)*
Parity	*Nulliparous 75.5%*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing

Liu et al. 2024

Author	*Liu et al.*
Year	*2024*
Country	*USA*
Reference	*[34]*
Study design	*Retrospective register study*
Setting	*Register*
Donated eggs	*No*
ICSI (%)	*Not stated*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*21 584 singleton live births*
Age of mother (years)	*Mean±SD: 35.3 ± 4.10*
Parity	*Previous birth: 30.4%*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*Not stated*
Control	***IVF without biopsy***
Participants (n)	*24 128 singleton live births*
Age of mother (years)	*Mean±SD: 33.0 ± 4.20*
Parity	*Previous birth: 23.8%*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **SD** = standard deviation

Liu et al. 2024

Author	*Liu et al.*
Year	*2024*
Country	*China*
Reference	*[35]*
Study design	*Retrospective cohort study*
Setting	*Single centre*
Donated eggs	*No*
ICSI (%)	*Both*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*26 singleton live births for women 38 years or older*
Age of mother (years)	*<38 years: 33.0 (30.0, 35.0)* *≥38 years: 40.0 (39.0, 42.0)*
Parity	*Previous live birth* *<38 years: 12.8%* *≥38 years: 48.1%*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-A*
Control	***IVF without biopsy***
Participants (n)	*7 singleton live births for women 38 years or older*
Age of mother (years)	*<38 years: 33.0 (30.0, 35.0)* *≥38 years: 41.0 (39.0, 43.0)*
Parity	*Previous live birth* *<38 years: 16.2%* *≥38 years: 38.0%*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy

Lu et al. 2020

Author	*Lu et al.*
Year	*2020*
Country	*China*
Reference	*[36]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*I: 100 %* *C: 45 %*
Day/stage of ET	*Blastocyst stage* *I: Day 5: 92.4%, Day 6: 7.6%* *C: Day 5: 85.8%, Day 6: 14.2%*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*305 singleton live births*
Age of mother (years)	*Mean±SD: 31.5± 4.2*
Parity	*Parity (median (IQR)): 0.0(0.0)*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT*
Control	***IVF without biopsy***
Participants (n)	*328 singleton live births*
Age of mother (years)	*Mean±SD: 31.8± 4.2*
Parity	*Parity (median (IQR)): 0.0(0.0)*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **IQR =** Interquartile range; **PGT** = preimplantation genetic testing; **SD** = standard deviation

Makhijani et al. 2021

Author	*Makhijani et al.*
Year	*2021*
Country	*USA*
Reference	*[37]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*Both ICSI and IVF*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*241 singleton live births*
Age of mother (years)	*Mean±SD: 35.9±4.1*
Parity	*Nulliparous: 91.3%*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-M 10.0%* *PGT-SR 2.1%* *PGT-A 88.0%*
Control	***IVF without biopsy***
Participants (n)	*515 singleton live births*
Age of mother (years)	*Mean±SD: 33.8±3.6*
Parity	*Nulliparous: 68.3%*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **PGT-M** = pre-implantation genetic testing for monogenic disorders; **PGT- SR** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation

Mastenbroek et al. 2007

Author	*Mastenbroek et al.*
Year	*2007*
Country	*The Netherlands*
Reference	*[38-40]*
Study design	*Randomized controlled trial*
Setting	*Multi center*
Donated eggs	*Yes*
ICSI (%)	*Per embryo* *I: ICSI: 161/434* *C: ICSI: 141/402*
Day/stage of ET	*Cleavage stage*
Fresh/frozen ET	*Both*
Intervention	***IVF with biopsy***
Participants (n)	*67 clinical pregnancies and 39 singleton live births*
Age of mother (years)	*Mean±SD: 38.0±1.7*
Parity	*Nulliparous: 67%*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*PGT-A*
Control	***IVF without biopsy***
Participants (n)	*92 clinical pregnancies and 57 singleton live births*
Age of mother (years)	*Mean±SD: 37.9±1.6*
Parity	*Nulliparous: 61%*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing, **PGT-A** = preimplantation genetic testing for aneuploidy; **SD** = standard deviation

Mejia et al. 2022

Author	*Meija et al.*
Year	*2022*
Country	*USA*
Reference	*[41]*
Study design	*Retrospective register study*
Setting	*Register*
Donated eggs	*No*
ICSI (%)	*I: 93.0%* *C: 74.4%*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Both*
Intervention	***IVF with biopsy***
Participants (n)	*Not stated*
Age of mother (years)	*Mean±SD: 33.5±3.0*
Parity	*Parity (median (IQR)) 0 (0-0)*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-A*
Control	***IVF without biopsy***
Participants (n)	*Not stated*
Age of mother (years)	*Mean±SD: 31.8±3.3*
Parity	*Parity (median (IQR)) 0 (0-0)*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IQR =** Interquartile range; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **SD** = standard deviation

Meyer et al. 2009

Author	*Meyer et al.*
Year	*2009*
Country	*USA*
Reference	*[42]*
Study design	*Randomized controlled trial*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*100%*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Fresh*
Intervention	***IVF with biopsy***
Participants (n)	*6 births*
Age of mother (years)	*Mean±SD: 31.6 ± 4.1*
Parity	*Not stated*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*Not stated*
Control	***IVF without biopsy***
Participants (n)	*15 births*
Age of mother (years)	*Mean±SD: 31.1 ± 2.6*
Parity	*Not stated*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = in vitro fertilization; **PGT** = preimplantation genetic testing; **SD** = standard deviation

Nekkebroeck et al. 2008

Author	*Nekkebroeck et al.*
Year	*2008*
Country	*Belgium*
Reference	*[43]*
Study design	*Prospective cohort study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*I: Not stated* *C: ICSI*
Day/stage of ET	*Not stated*
Fresh/frozen ET	*Not stated*
Intervention	***IVF with biopsy***
Participants (n)	*41 singleton live births*
Age of mother (years)	*Mean±SD: 34.5 ±4.8*
Parity	*Firstborn n=28*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*PGD n=19* *PGS n=22*
Control	***IVF without biopsy***
Participants (n)	*35 singleton live births*
Age of mother (years)	*Mean±SD: 33.5 ±3.8*
Parity	*Firstborn n=23*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGD** = preimplantation genetic diagnosis (PGT-M or PGT-SR); **PGS** = preimplantation genetic screening (PGT-A); **PGT** = preimplantation genetic testing; **SD** = standard deviation

Nekkebroeck et al. 2008

Author	*Nekkebroeck et al.*
Year	*2008*
Country	*Belgium*
Reference	*[44]*
Study design	*Prospective cohort study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*I: Not stated* *C: ICSI*
Day/stage of ET	*Not stated*
Fresh/frozen ET	*Not stated*
Intervention	***IVF with biopsy***
Participants (n)	*70 singleton live births*
Age of mother (years)	*Mean±SD: 34.2±4.6*
Parity	*Firstborn n=49*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*PGD n=28* *PGS n=42*
Control	***IVF without biopsy***
Participants (n)	*70 singleton live births*
Age of mother (years)	*Mean±SD: 33.6±4.1*
Parity	*Firstborn n=49*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGD** = preimplantation genetic diagnosis (PGT-M or PGT-SR); **PGS** = preimplantation genetic screening (PGT-A); **PGT** = preimplantation genetic testing; **SD** = standard deviation

Ricciarelli et al. 2013

Author	*Ricciarelli et al.*
Year	*2013*
Country	*Spain*
Reference	*[45]*
Study design	*Prospective cohort study*
Setting	*Multi center*
Donated eggs	*Yes*
ICSI (%)	*I: Not stated* *C: IVF (n=838),ICSI (n=5 080)*
Day/stage of ET	*Not stated*
Fresh/frozen ET	*Not stated*
Intervention	***IVF with biopsy***
Participants (n)	*188 singleton live births*
Age of mother (years)	*Not stated*
Parity	*Not stated*
Day/stage of biopsy	*Not stated*
Types of PGT included	*PGD*
Control	***IVF without biopsy***
Participants (n)	*5 092 singleton live births*
Age of mother (years)	*Not stated*
Parity	*Not stated*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection**; IVF** = *in vitro* fertilization; **PGD** = preimplantation genetic diagnosis (PGT-M or PGT-SR); **PGT** = preimplantation genetic testing

Richardson et al. 2022

Author	*Richardson et al.*
Year	*2022*
Country	*USA*
Reference	*[46]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*Not stated*
Day/stage of ET	*I: Blastocyst stage: 100%* *C: Frozen ET: Cleavage stage 16%, Blastocyst stage 84%* *C: Fresh ET: Cleavage stage 26%, Blastocyst stage 74%*
Fresh/frozen ET	*I: 100% frozen* *C: Frozen ET: 100% frozen, Fresh ET: 0% frozen*
Intervention	***IVF with biopsy***
Participants (n)	*150 singleton live births of which 148 was included in our results*
Age of mother (years)	*Mean±SD: 37.2±4.1*
Parity	*Nulliparous: 67%*
Day/stage of biopsy	*Not stated*
Types of PGT included	*PGT-A*
Control	***IVF without biopsy***
Participants (n)	*150 singleton live births of which 147 was included in our results*
Age of mother (years)	*Mean±SD:* *Frozen: 35.9± 4.0* *Fresh: 35.3± 3.4*
Parity	*Frozen ET: Nulliparous: 57%* *Fresh ET: Nulliparous: 43%*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection**; IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **SD** = standard deviation

Riestenberg et al. 2021

Author	*Riestenberg et al.*
Year	*2021*
Country	*USA*
Reference	*[47]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*Yes*
ICSI (%)	*Not stated*
Day/stage of ET	*Not stated*
Fresh/frozen ET	*Not stated*
Intervention	***IVF with biopsy***
Participants (n)	*475 singleton pregnancies*
Age of mother (years)	*Mean±SD:* *Autologous cycles: 36.7±3.8* *Oocyte donation cycles: 28.6±5.7*
Parity	*Parity (mean ±SD): 0.6±0.9*
Day/stage of biopsy	*Majority blastocyst*
Types of PGT included	*PGT-A*
Control	***IVF without biopsy***
Participants (n)	*237 singleton pregnancies*
Age of mother (years)	*Mean±SD:* *Autologous cycles: 36.5±3.9* *Oocyte donation cycles: 26.7±4.8*
Parity	*Parity (mean ±SD): 0.6±0.8*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection**; IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **SD** = standard deviation

Roeca 2020

Author	*Roeca et al.*
Year	*2020*
Country	*USA*
Reference	*[48]*
Study design	*Retrospective register study*
Setting	*Register*
Donated eggs	*100%*
ICSI (%)	*Both ICSI and IVF*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*I: Frozen: 44.8%, Fresh: 55.2%* *C: Frozen: 38.9%, Fresh: 61.1%*
Intervention	***IVF with biopsy***
Participants (n)	*933 singleton live births*
Age of mother (years)	*Mean±SD: 41.7 ±5.5*
Parity	*Parity (mean ±SD): 0.5±1.0*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-M* *PGT-SR* *PGT-A*
Control	***IVF without biopsy***
Participants (n)	*8 221 singleton live births*
Age of mother (years)	*Mean±SD: 41.3 ±5.2*
Parity	*Parity (mean ±SD): 0.4 ±0.8*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **PGT-M** = pre-implantation genetic testing for monogenic disorders; **PGT-SR** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation

Sarkar et al. 2023

Author	*Sarkar et al.*
Year	*2023*
Country	*USA*
Reference	*[49]*
Study design	*Retrospective register study*
Setting	*Register*
Donated eggs	*Not stated*
ICSI (%)	*Not stated*
Day/stage of ET	*Not stated*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*3 400 singleton live births*
Age of mother (years)	*Mean±SD: 36.1±3.8*
Parity	*Not stated*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-A*
Control	***IVF without biopsy***
Participants (n)	*2 811 singleton live births*
Age of mother (years)	*Mean±SD: 33.2±4.3*
Parity	*Not stated*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **SD** = standard deviation;

Shi et al. 2023

Author	*Shi et al.*
Year	*2023*
Country	*China*
Reference	*[50]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*100%*
Day/stage of ET	*Not stated*
Fresh/frozen ET	*Fresh*
Intervention	***IVF with biopsy***
Participants (n)	*164 births after SET (26 RIF and 140 RPL)*
Age of mother (years)	*Mean±SD:* *iRPL: 34.9±4.5, iRIF: 35.2±3.9*
Parity	*Not stated*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-A*
Control	***IVF without biopsy***
Participants (n)	*145 births after SET (53 RIF and 92 RPL)*
Age of mother (years)	*Mean±SD:* *iRPL: 35.9±5.2, iRIF: 35.6±4.0*
Parity	*Not stated*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **iRIF** = idiopathic recurrent implantation failure; **iRPL** = idiopathic recurrent pregnancy loss; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **RIF** = recurrent implantation failure; **RPL** = recurrent pregnancy loss; **SD** = standard deviation; **SET** = single embryo transfer

Sites 2021

Author	*Sites et al.*
Year	*2021*
Country	*USA*
Reference	*[51]*
Study design	*Retrospective register study*
Setting	*Register*
Donated eggs	*No*
ICSI (%)	*Not stated*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*585 singleton live births*
Age of mother (years)	*% in each group* *<30 years: 5.5 %* *31 - 34 years: 21.7 %* *35 - 37 years: 28.9 %* *38 - 40 years 28.0%* *41 - 42 years: 5.3 %* *≥43 years: 2.4%*
Parity	*number of children after birth* *1: 59.6 %* *2: 30.4 %* *≥3: 10.0 %*
Day/stage of biopsy	*Majority blastocyst*
Types of PGT included	*Not stated*
Control	***IVF without biopsy***
Participants (n)	*2 191 singleton live births*
Age of mother (years)	*% in each group* *<30 years:11.8%* *31 - 34 years:35.1 %* *35 - 37 years:32.1%* *38 - 40 years: 15.4 %* *41 - 42 years: 4.0 %* *≥43 years:1.6 %*
Parity	*number of children after birth* *1: 48.7 %* *2: 42.7 %* *≥3: 8.6 %*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing

Snelgrove et al. 2024

Author	*Snelgrove et al.*
Year	*2024*
Country	*Canada*
Reference	*[52]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*Not stated*
Day/stage of ET	*Not stated*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*38 pregnancies*
Age of mother (years)	*Median (IQR): 37 (34, 40)*
Parity	*Not stated*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-M*
Control	***IVF without biopsy***
Participants (n)	*61 pregnancies*
Age of mother (years)	*Median (IQR): 37 (35, 40)*
Parity	*Not stated*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IQR =** Interquartile range; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-M** = pre-implantation genetic testing for monogenic disorders

Srebnik et al. 2023

Author	*Srebnik et al.*
Year	*2023*
Country	*Israel*
Reference	*[53]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*100%*
Day/stage of ET	*Cleavage stage or blastocyst stage*
Fresh/frozen ET	*I: not stated* *C: Frozen: 15.9%, Fresh: 83.1%*
Intervention	***IVF with biopsy***
Participants (n)	*120 singleton live births*
Age of mother (years)	*Mean±SD: 31.1 ± 4.4*
Parity	*Parity (median (IQR)): 0 (0–3)*
Day/stage of biopsy	*Polar body 10.8%,* *Cleavage stage 76.7%,* *Blastocyst 12.5%*
Types of PGT included	*Not stated*
Control	***IVF without biopsy***
Participants (n)	*779 singleton live births*
Age of mother (years)	*Mean±SD: 31.7 ± 5.0*
Parity	*Parity (median (IQR)): 0 (0–1)*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IQR =** Interquartile range; **IVF** = in vitro fertilization; **PGT** = preimplantation genetic testing; **SD** = standard deviation

Staessen et al. 2004

Author	*Staessen et al.*
Year	*2004*
Country	*Belgium*
Reference	*[54]*
Study design	*Randomized controlled trial*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*100%*
Day/stage of ET	*Blastocyst stage or cleavage stage* *I: Blastocyst* *C: Majority blastocyst*
Fresh/frozen ET	*Not stated*
Intervention	***IVF with biopsy***
Participants (n)	*22 ongoing pregnancies*
Age of mother (years)	*Mean±SD: 40.1 ± 2.4*
Parity	*Parity (mean±SD): 0.5±0.8*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*PGT-A*
Control	***IVF without biopsy***
Participants (n)	*29 ongoing pregnancies*
Age of mother (years)	*Mean±SD: 39.9 ± 2.4*
Parity	*Parity (mean±SD): 0.5±0.9*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **SD** = standard deviation

Staessen et al. 2008

Author	*Staessen et al.*
Year	*2008*
Country	*Belgium*
Reference	*[55]*
Study design	*Randomized controlled trial*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*Both ICSI and IVF*
Day/stage of ET	*Cleavage or Blastocyst stage* *I: Blastocyst stage* *C: Majority blastocyst stage*
Fresh/frozen ET	*Fresh*
Intervention	***IVF with biopsy***
Participants (n)	*37 live births*
Age of mother (years)	*Mean±SD: 30.0± 4.1*
Parity	*Parity (mean±SD): 0.2±0.5*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*Not stated (all)*
Control	***IVF without biopsy***
Participants (n)	*37 live births*
Age of mother (years)	*Mean±SD: 29.7±3.7*
Parity	*Parity (mean±SD): 0.3±0.6*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection**; IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **SD** = standard deviation

Sun et al. 2024

Author	*Sun et al.*
Year	*2024*
Country	*China*
Reference	*[56]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*100%*
Day/stage of ET	*Day 5 or day 6* *I: Day 5 70.3%, Day 6 29.7%* *C: Day 5 60.5%, Day 6 39.5%*
Fresh/frozen ET	*I: Frozen: 20%, Fresh: 80%* *C: Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*857 singleton live births*
Age of mother (years)	*Mean (range): 30 (27–33)*
Parity	*Not stated*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-M* *PGT-SR* *PGT-A*
Control	***IVF without biopsy***
Participants (n)	*601 singleton live births*
Age of mother (years)	*Mean (range): 30 (28–35)*
Parity	*Not stated*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **PGT-M** = pre-implantation genetic testing for monogenic disorders; **PGT - SR** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation

Sunkara et al. 2017

Author	*Sunkara et al.*
Year	*2017*
Country	*United Kingdom*
Reference	*[57]*
Study design	*Retrospective register study*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*I: 79.5%* *C: 44.8%*
Day/stage of ET	*I: Cleavage stage 34.5%, Blastocyst stage 65.5%* *C: Cleavage stage 90.0%, Blastocyst stage 10.0%*
Fresh/frozen ET	*Fresh*
Intervention	***IVF with biopsy***
Participants (n)	*439 singleton live births*
Age of mother (years)	*% in each group* *≤34years 46.0%* *35–37years 27.0%* *38–39years 13.0%* *40–42years 9.8%* *43–44years 3.6%* *≥45years 0.6%*
Parity	*Not stated*
Day/stage of biopsy	*Not stated*
Types of PGT included	*PGD*
Control	***IVF without biopsy***
Participants (n)	*87 571 singleton live births*
Age of mother (years)	*% in each group* *≤34years 46.3%* *35–37years 24.5%* *38–39years 14.4%* *40–42years 11.5%* *43–44years 2.6%* *≥45years0.7%*
Parity	*Not stated*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGD** = preimplantation genetic diagnosis (PGT-M or PGT-SR); **PGT** = preimplantation genetic testing

Verpoest et al. 2009

Author	*Verpoest et al.*
Year	*2009*
Country	*Belgium*
Reference	*[58]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*100%*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Not stated*
Intervention	***IVF with biopsy***
Participants (n)	*618 pregnancies*
Age of mother (years)	*Mean: 33.9*
Parity	*Not stated*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*PGD*
Control	***IVF without biopsy***
Participants (n)	*947 pregnancies*
Age of mother (years)	*Mean: 31.9*
Parity	*Not stated*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection**; IVF =** *in vitro* fertilization; **PGD** = preimplantation genetic diagnosis (PGT-M or PGT-SR); **PGT** = preimplantation genetic testing

Winter et al. 2014

Author	*Winter et al.*
Year	*2014*
Country	*Belgium*
Reference	*[59]*
Study design	*Prospective case control study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*100%*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Not stated but same protocol in both groups*
Intervention	***IVF with biopsy***
Participants (n)	*47 singleton live births*
Age of mother (years)	*Mean ± SD: 30.0 ±3.5*
Parity	*Nulliparous 57%*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*PGD*
Control	***IVF without biopsy***
Participants (n)	*49 singleton live births*
Age of mother (years)	*Mean ± SD: 31.3 ±3.9*
Parity	*Nulliparous 59%*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection**; IVF =** *in vitro* fertilization; **PGD** = preimplantation genetic diagnosis (PGT-M or PGT-SR); **PGT** = preimplantation genetic testing; **SD** = standard deviation

Winter et al. 2015

Author	*Winter et al.*
Year	*2015*
Country	*Belgium*
Reference	*[60]*
Study design	*Prospective case control study*
Setting	*Single center*
Donated eggs	*Not stated*
ICSI (%)	*100%*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Not stated but same protocol in both groups*
Intervention	***IVF with biopsy***
Participants (n)	*47 singleton live births*
Age of mother (years)	*Probably mean ±SD: 30.0 ±3.5*
Parity	*Firstborn: 24*
Day/stage of biopsy	*Cleavage stage*
Types of PGT included	*PGD*
Control	***IVF without biopsy***
Participants (n)	*50 singleton live births*
Age of mother (years)	*Probably mean ±SD: 31.3 ±3.9*
Parity	*Firstborn: 30*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection**; IVF** = *in vitro* fertilization; **PGD** = preimplantation genetic diagnosis (PGT-M or PGT-SR); **PGT** = preimplantation genetic testing; **SD** = standard deviation

Wu 2021

Author	*Wu et al.*
Year	*2021*
Country	*China*
Reference	*[61]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*Not stated*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*79 live births after SET*
Age of mother (years)	*Probably mean ±SD: 30.4 ±4.5*
Parity	*Not stated*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-M 45.4%* *PGT-SR 31.9%* *PGT-A 22.7%*
Control	***IVF without biopsy***
Participants (n)	*184 live births after SET*
Age of mother (years)	*Probably mean ±SD: 30.5 ±4.1*
Parity	*Not stated*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **PGT-M** = pre-implantation genetic testing for monogenic disorders; **PGT- R** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation; **SET** = single embryo transfer

Zhang et al. 2019

Author	*Zhang et al.*
Year	*2019*
Country	*USA*
Reference	*[62]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*Not stated*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*I: 75.7%* *C: 68.9%*
Intervention	***IVF with biopsy***
Participants (n)	*155 singleton live births*
Age of mother (years)	*Mean ± SD: 36.9 ±3.9*
Parity	*Parity (mean ± SD): 0.5 ± 0.7*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-M 15.3%* *PGT-A 84.7%*
Control	***IVF without biopsy***
Participants (n)	*150 singleton live births*
Age of mother (years)	*Mean ± SD: 36.5 ± 4.1*
Parity	*Parity (mean ± SD): 0.4 ± 0.6*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **PGT-M** = pre-implantation genetic testing for monogenic disorders; **SD** = standard deviation

Zheng et al. 2022

Author	*Zheng et al.*
Year	*2022*
Country	*China*
Reference	*[63]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*I: Not stated* *C: ICSI*
Day/stage of ET	*Blastocyst stage* *I: Day 5: 58.9%, Day 6 or 7: 41.1%* *C: Day 5: 53.2%, day 6 or 7: 46.8%*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*107 singleton live births*
Age of mother (years)	*Mean ± SD: 29.6 ±4.2*
Parity	*Nulliparous 86.9%*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-SR*
Control	***IVF without biopsy***
Participants (n)	*585 singleton live births*
Age of mother (years)	*Mean ± SD: 30.0 ±4.4*
Parity	*Nulliparous 74.5%*

C = control; **ET =** embryo transfer; **I** = intervention; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-SR** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation

Zheng et al. 2022

Author	*Zheng et al.*
Year	*2022*
Country	*China*
Reference	*[64]*
Study design	*Retrospective cohort study*
Setting	*Single center*
Donated eggs	*No*
ICSI (%)	*Not stated*
Day/stage of ET	*Blastocyst stage*
Fresh/frozen ET	*Frozen*
Intervention	***IVF with biopsy***
Participants (n)	*236 ongoing singleton pregnancies and 232 singleton live births*
Age of mother (years)	*Mean ± SD: 30.9 ± 4.4*
Parity	*Nulliparous 77.6%*
Day/stage of biopsy	*Blastocyst*
Types of PGT included	*PGT-M* *PGT-SR* *PGT-A*
Control	***IVF without biopsy***
Participants (n)	*2 914 ongoing singleton pregnancies and 2 829 singleton live births*
Age of mother (years)	*Mean ± SD: 30.6 ± 4.2*
Parity	*Nulliparous 74.1%*

ET = embryo transfer; **ICSI** = intracytoplasmic sperm injection; **IVF** = *in vitro* fertilization; **PGT** = preimplantation genetic testing; **PGT-A** = preimplantation genetic testing for aneuploidy; **PGT-M** = pre-implantation genetic testing for monogenic disorders; **PGT-SR** = preimplantation genetic testing for structural rearrangements; **SD** = standard deviation

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