

Supplemental Online Content

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This supplemental material has been provided by the authors to give readers additional information about their work.

eTable 1. Swedish population registers used to obtain information on cohort.

Register	Description	Years	Information retrieved
Swedish National Cancer Register	Since 1958, six regional cancer centers report on all cancer cases, and the data includes histological type, site and stage of tumor, date of diagnosis, eventual date and cause of death, with the coverage rate of 96%. ¹	1994-2017	date of BC diagnosis, age at diagnosis, tumor characteristics, treatment details for BC.
Swedish National Quality Register for BC	A population-based register, with information on tumor characteristics, treatment, and relapse occurrence in patients diagnosed with invasive BC since 2008, with the coverage rate of 99%. ²	2008-2017	
Regional quality registers for BC, for regions West and Stockholm-Gotland	Prior to 2008, data on tumor characteristics, treatment details and relapse occurrence for all cases of invasive BC were reported to the regional quality registers.	1994-2007	
The Total Population Register	It contains data on life events including birth, death, marital status and migration; maintained by the government agency Statistics Sweden. Updates are transmitted daily from the Tax Agency to the TPR. ³	1994-2018	date of death, immigrations and emigrations
The Swedish Multi-Generation Register	It contains connections between index persons (registered in Sweden at some time since 1961 and born in 1932 or later) and their biological parents. ⁴	1994-2018	year of livebirths
Longitudinal integrated database for health insurance and labor market studies (LISA)	It is maintained by the government agency Statistics Sweden and holds annual registers since 1990, integrating existing data from the labor market, educational and social sector. ⁵	1994-2017	educational level and country of birth
The Medical Birth Register	It includes data on all births in Sweden since 1973, reported information comes from medical records from the prenatal, delivery and neonatal care. ⁶	1994-2017	date, perinatal and obstetric outcomes of post-diagnosis livebirths
The National Quality Registry for Assisted Reproduction	It was started 2007 and contains data on all ART-treatments in Sweden, in both public and private IVF clinics, with 100% coverage rate of care providers. ⁷	2007-2017	treatment details and outcome of all ART cycles

Abbreviations: ART, assisted reproductive technology; BC, breast cancer.

References:

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6. Axelsson O. The Swedish medical birth register. *Acta Obstet Gynecol Scand*. 2003;82(6):491-2.
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eTable 2. Characteristics of women with breast cancer (BC) in the matched cohort.

Characteristic	Exposed to FP (n=425)	Unexposed to FP (n=850)	P
Educational level			
Compulsory school	27 (6.4%)	84 (9.9%)	0.217
Secondary school	151 (35.5%)	290 (34.1%)	
Higher education	244 (57.4%)	470 (55.3%)	
Missing	3 (0.7%)	6 (0.7%)	
Country of birth			
Nordic	345 (81.2%)	628 (73.9%)	0.004
Non-Nordic	80 (18.8)	222 (26.1%)	
Age at diagnosis, years			
21-29	115 (27.1%)	128 (15.1%)	<0.001
30-34	179 (42.1%)	379 (44.6%)	
35-42	131 (30.8%)	343 (40.3%)	
Geographical region			
Stockholm Gotland	226 (53.2%)	452 (53.2%)	1.0
West region	64 (15.1%)	128 (15.1%)	
Other	135 (31.7%)	270 (31.7%)	
Parity at BC diagnosis			
0	302 (71.1%)	171 (20.1%)	<0.001
1	102 (24%)	183 (21.5%)	
>=2	21 (4.9%)	496 (58.5%)	
Year of diagnosis			
1994-2007	72 (16.9%)	144 (16.9%)	0.100
2008-2017	352 (83.1%)	706 (83.1%)	
Tumor size			
T0	15 (3.5%)	27 (3.2%)	0.036
T1	184 (43.3%)	352 (41.4%)	
T2	190 (44.7%)	341 (40.1%)	
T3	34 (8.0%)	119 (14.0%)	
TX (size cannot be assessed)	2 (0.5%)	11 (1.3%)	
Lymph nodes with metastasis			
0	271(63.8%)	478 (56.2%)	0.035
1-3	120 (28.2%)	271 (31.9%)	
>3	34 (8.0%)	99 (11.7%)	
Missing	0 (0%)	2 (0.2%)	
Tumor Grade			
1	26 (6.1%)	51(6.0%)	0.178
2	108 (25.4%)	177 (20.8%)	
3	180 (42.4%)	359 (42.2%)	
Missing	111 (26.1%)	263 (30.9%)	
ER-status			
Positive	289 (68.0%)	515 (60.6%)	0.034
Negative	128 (30.1%)	313 (36.8%)	
Missing	8 (1.9%)	22 (2.6%)	
PR-status			
Positive	249 (58.6%)	431 (50.7%)	0.029
Negative	167 (39.3%)	397 (46.7%)	
Missing	9 (2.1%)	22 (2.6%)	
HER-2			
Amplified	108 (25.4%)	176 (20.7%)	0.158
Non-amplified	199 (46.8%)	429 (50.5%)	
Unknown	118 (27.8%)	245 (28.8%)	

Characteristic	Exposed to FP (n=425)	Unexposed to FP (n=850)	P
Therapy			
Neoadjuvant	105 (24.7%)	249 (29.3)	0.100
Adjuvant	419 (98.6%)	823 (96.8%)	0.161
Chemotherapy			0.002
Yes	399 (93.9%)	745 (87.7%)	
No	25 (5.9%)	98 (11.5%)	
Missing	1 (0.2%)	7 (0.8%)	
Radiotherapy			0.003
Yes	317 (74.6%)	650 (76.5%)	
No	94 (22.1%)	141 (16.6%)	
Missing	14 (3.3%)	59 (6.9%)	
Endocrine therapy			0.011
Yes	281 (66.1%)	498 (58.6%)	
No	121 (28.5%)	314 (36.9%)	
Missing	23 (5.4%)	38 (4.5%)	
Her2- therapy			0.040
Yes	111 (26.1%)	169 (19.9%)	
No	253 (59.5%)	549 (64.6%)	
Missing	61 (14.4%)	132 (15.5%)	
NOTE: Data are presented as No (%) unless noted otherwise. Abbreviations: ER, estrogen receptor; FP, fertility preservation; PR, progesterone receptor.			

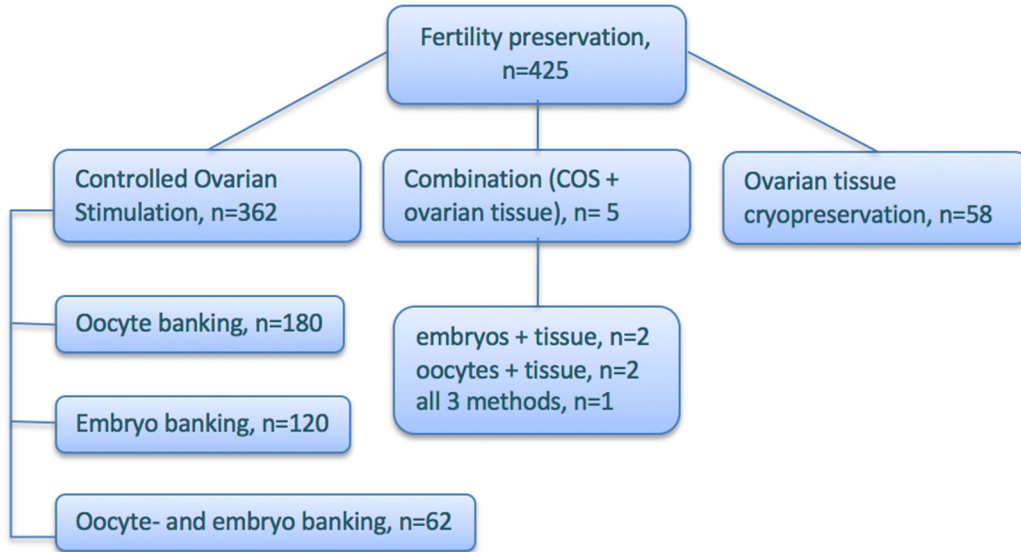
eTable 3. Characteristics of women with ≥ 1 live birth > 10 months after diagnosis of breast cancer, and perinatal outcome for the first live birth if >1 (data for 1995-2017).

Characteristic or outcome	Women with FP (n=83, livebirths n= 119)	Women without FP (n=62, livebirths n=75)	P
Age at time of delivery, years Mean (SD)	35.3 (3.9)	35.2 (3.5)	0.538
Smoking	7 (8.4%)	3 (4.8%)	0.398
BMI Mean (SD) Missing	23.8 (3.9) 8 (9)	25.1 (4.0) 3 (5)	0.014
Family situation Living with a partner	76 (91.6%)	58 (93.5%)	0.318
Time between cancer diagnosis and first post-diagnosis livebirth < 2 years 2-5 years >5 years	2 (2.4%) 50 (60.2%) 31 (37.4%)	1 (1.6%) 36 (58.1%) 25 (40.2%)	0.897
Parity at 1 st post-diagnosis live birth 0 1 ≥ 2	64 (77.1%) 16 (19.3%) 3 (3.6%)	21 (33.9%) 18 (29.0%) 23 (37.1%)	<0.001
Number of post-diagnosis births 1 2 ≥ 3	52 (62.7%) 26 (31.3%) 5 (6%)	51 (82.3%) 9 (14.5%) 2 (3.2%)	0.036
Mode of conception ART-treatment	20	1	<0.001
Delivery mode Vaginal Assisted vaginal Planned cesarean Unplanned cesarean	44 (53%) 11 (13.25%) 11 (13.25%) 17 (20.5%)	46 (74.2%) 2 (3.2%) 5 (8.1%) 9 (14.5%)	0.044
Gestational age at birth, weeks Mean (SD), range	39.6 (1.7), 32-43	39.7 (1.6), 34-42	0.269
Gestational weight at birth, grams Mean (SD) Range	3522 (578) 1558-4915	3568 (487) 2500-4770	0.614
SGA	2 (2.4%)	0	0.145
LGA	2 (2.4%)	0	0.145
Hypertensive disorders of pregnancy Gestational hypertension Preeclampsia	3 (3.6%) 2 (2.4%)	1/62 (1.6%) 0/62	0.467 0.218
GDM gestational diabetes	1 (1.2%)	0	0.386
Induced delivery	20 (24.1%)	8 (12.9%)	0.091
Apgar <7 at 5 minutes	2 (2.4%)	0	0.218
Congenital malformation	3 (3.6%)	1 (1.6%)	0.467
NOTE: Data are presented as No (%) unless noted otherwise. Abbreviations: FP, fertility preservation; SD, standard deviation.			

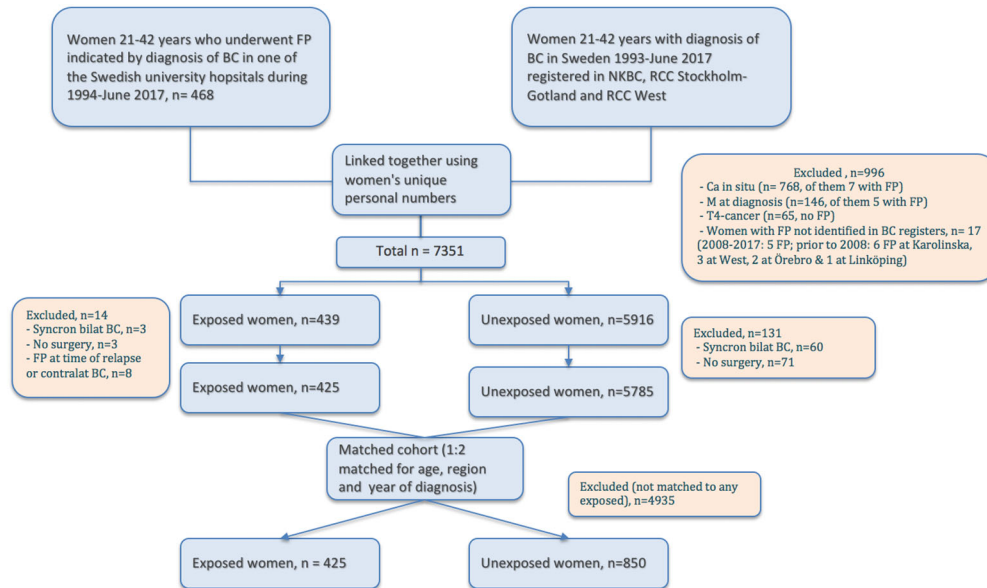
eTable 4. Characteristics and reproductive outcome of women with ART-treatments after diagnosis of BC (data for treatments available for years 2007-2017).

Characteristic or outcome	Women with FP (n= 48, ART-treatments, n= 107)	Women without FP (n= 10, ART-treatments, n= 18)	P
Time between cancer diagnosis and first post-diagnosis ART-treatment			
<2 years	10 (20.8%)	2 (20%)	0.857
2-5 years	23 (47.9%)	4 (40%)	
>5 years	15 (31.3%)	4 (40%)	
Type of ART-treatment			
IVF (for fresh cycles)	10	3	0.347
ICSI (for fresh cycles)	30	8	0.161
Interrupted	17	5	0.220
FET	62	4	0.005
Use of frozen eggs	20 cycles/15 women	1 cycle	0.080
Donated oocytes	1	0	0.680
Number of ART-treatments/cycles per woman			
1	21 (43.7%)	6 (60%)	0.36
2	10 (20.8%)	2 (20%)	
≥3	17 (35.5%)	2 (20%)	
Outcome per cycle			
ET	90	13	0.220
Biochemical pregnancies	4 (2 women, 4 cycles)	0	0.404
Miscarriage	3 (2 women)	0	0.472
Livebirths	21 (20 women)	3 (3 women)	0.768
NOTE: Data are presented as No (%) unless noted otherwise. Abbreviations: ART, assisted reproductive technologies; ET, embryo transfer; FET, frozen embryo transfer; FP, fertility preservation; IVF, in vitro fertilization; ICSI intraplasmatic sperm injection.			

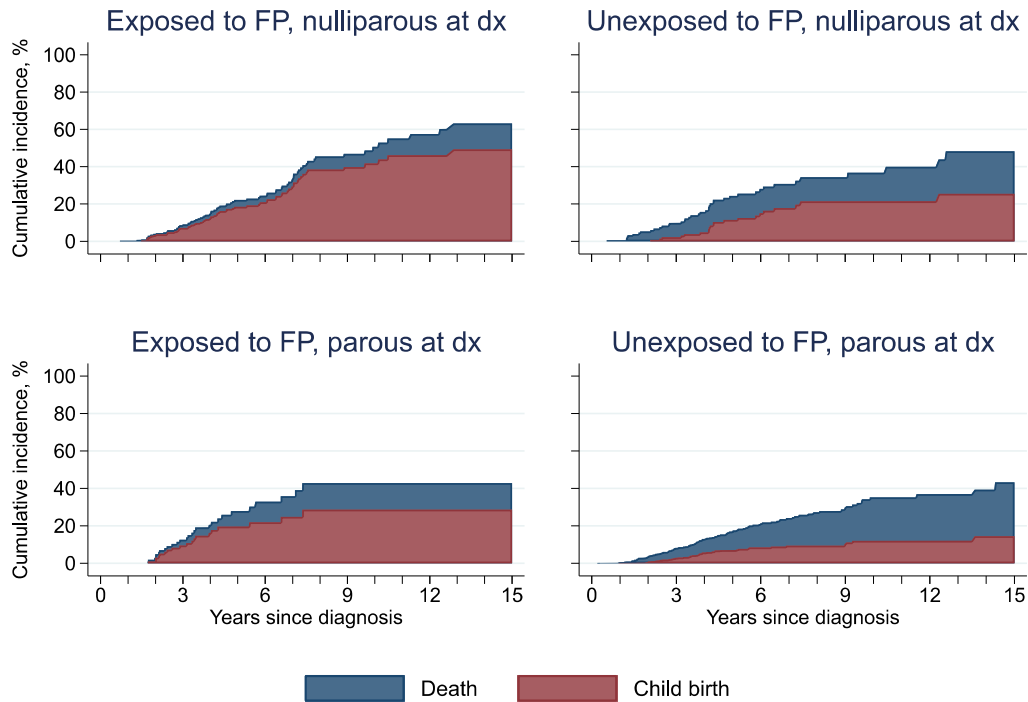
eFigure 1. Choice of fertility preservation method among women with breast cancer. COS, controlled ovarian stimulation.



eFigure 2. Study diagram. FP, fertility preservation.



eFigure 3. Cumulative incidence of childbirth after breast cancer by years since diagnosis, stratified on parity at diagnosis, with death as a competing risk. FP, fertility preservation.



	Exposed to FP		Unexposed to FP	
	5-year CIF (95% CI)	10-year CIF (95% CI)	5-year CIF (95% CI)	10-year CIF (95% CI)
Nulliparous at diagnosis				
Death	3.9 (1.9-7.9)	12.9 (6.2-25.8)	13.4 (8.4-20.8)	16.6 (9.8-27.2)
Child birth	19.0 (14.2-25.1)	43.4 (34.3-53.8)	12.7 (7.6-21.1)	24.3 (15.9-36.0)
Parous at diagnosis				
Death	9.7 (4.2-21.6)	17.4 (8.2-34.7)	10.5 (7.9-13.9)	25.2 (19.3-32.5)
Child birth	20.2 (12.7-31.3)	30.8 (19.2-47.2)	7.5 (5.3-10.5)	13.4 (9.3-19.0)