

Supplementary Online Content

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

eTable 1. Characteristics of 13 case-control studies from the Ovarian Cancer Association Consortium (1989-2009) included in the pooled analysis of breastfeeding and ovarian cancer risk

Study	Reference	Study Period	Controls/Cases (Parous)	Among Controls		
				Parity (number of births) ^a	Ever breastfed N (%)	Breastfeeding duration per child (months) ^{a,b}
AUS	Australian Ovarian Cancer Study ³⁷	2001-2006	1,287/ 1,218	2.7 (1.2)	1,088 (85)	6.2 (4.5)
CON	Connecticut Ovarian Cancer Study ³⁸	1998-2003	477/ 394	2.6 (1.2)	271 (57)	6.9 (5.6)
DOV	Diseases of the Ovary and their Evaluation ⁴⁰	2000-2009	1,563/ 1,171	2.6 (1.3)	1,223 (78)	6.5 (6.5)
GER	German Ovarian Cancer Study ⁴¹	1993-1996	439/ 199	2.2 (1.1)	305 (69)	3.4 (3.0)
HAW	Hawaii Ovarian Cancer Case-Control Study ³⁴	1999-2008	919/ 630	2.8 (1.5)	688 (75)	7.0 (6.6)
HOP	Hormones and Ovarian Cancer Prediction Study ³⁵	2003-2008	1,573/ 639	2.7 (1.5)	886 (56)	6.0 (5.4)
MAL	Malignant Ovarian Cancer Study ³³	1994-1999	1,418/ 616	2.3 (1.0)	1,322 (93)	5.1 (4.5)
NCO	North Carolina Ovarian Cancer Study ⁴⁴	1998-2008	943/ 940	2.5 (1.4)	391 (41)	6.3 (5.6)
NEC	New England Case Control Study ⁴²	1991-2003	1,877/ 1,532	2.8 (1.4)	1,067 (57)	6.8 (6.2)
NJO	New Jersey Ovarian Cancer Study ³²	2004-2008	400/ 165	2.7 (1.3)	184 (46)	6.9 (7.5)
SON	Southern Ontario Ovarian Cancer Study ³⁹	1989-1992	498/ 344	2.8 (1.5)	325 (65)	4.9 (3.8)
STA	Family Registry for Ovarian Cancer and Genetic Epidemiology of Ovarian Cancer ³⁶	1997-2001	431/ 409	2.4 (1.4)	311 (72)	8.7 (6.8)
USC	University of Southern California Study of Lifestyle and Women's Health ⁴³	1999-2004	2,018/ 1,716	2.6 (1.4)	1,356 (67)	6.6 (5.9)

^aMean (standard deviation)

^bPer child that was breastfed

eTable 2. Characteristics of participants from 13 studies from the Ovarian Cancer Association Consortium (1989-2009) included in the pooled analysis of breastfeeding and ovarian cancer risk

	Controls (N=13,843)	Cases (N=9,973)
Characteristics	N (%)	N (%)
Age		
<45 years	2,204 (16)	1,283 (13)
45-<50 years	1,758 (13)	1,184 (12)
50-<55 years	2,104 (15)	1,495 (15)
55-<60 years	2,097 (15)	1,669 (17)
60-<65 years	1,988 (14)	1,592 (16)
65-<70 years	1,651 (12)	1,256 (16)
≥70 years	2,041 (15)	1,494 (15)
Birth Year		
<1930	1,786 (13)	1,381 (14)
1930-<1940	3,058 (22)	2,413 (24)
1940-<1950	4,182 (30)	3,213 (32)
1950-<1960	3,285 (24)	2,137 (21)
≥1960	1,532 (11)	829 (8)
Race		
White	12,336 (89)	8,767 (88)
Black	453 (3)	356 (3)
Asian	552 (4)	469 (5)
Other/ Unknown	502 (4)	381 (4)
Education		
Less than high school	2,330 (17)	1,794 (18)
High school	3,235 (23)	2,503 (25)
Some college	3,272 (24)	2,437 (24)
College	3,807 (28)	2,312 (23)
Unknown	1,199 (9)	927 (9)
Menopausal Status		
Peri/premenopausal	4,501 (33)	2,635 (26)
Postmenopausal	9,138 (66)	7,227 (72)
Unknown	204 (1)	111 (1)
Body Mass Index^a		
<20 kg/m ²	5,273 (38)	3,530 (35)
20-24.9 kg/m ²	6,855 (50)	4,901 (49)
25-29.9 kg/m ²	857 (6)	729 (7)
≥30 kg/m ²	250 (2)	204 (2)
Unknown	608 (4)	609 (6)
Oral Contraceptive Use		
Never users	4,485 (32)	4,014 (40)
<1 year	1,404 (10)	1,226 (13)
1-<5 years	3,384 (24)	2,260 (23)
5-<10 years	2,276 (16)	1,312 (13)

≥10 years	2,169 (16)	1,022 (10)
Unknown	125 (1)	139 (1)
Parity^b		
1	2,242 (16)	2,061 (21)
2	5,494 (40)	3,785 (38)
≥3	6,107 (44)	4,127 (41)
Endometriosis		
No	12,633 (91)	8,810 (88)
Yes	736 (5)	705 (7)
Unknown	474 (3)	458 (5)
Family History of Ovarian Cancer^c		
No	10,572 (76)	7,068 (71)
Yes	346 (3)	485 (5)
Unknown	2,925 (21)	2,420 (24)
Ever breastfed		
No	4,426 (32)	3,992 (40)
Yes	9,417 (68)	5,981 (60)

^aBMI in young adulthood

^bNumber of births with pregnancy period ≥ 6 months

^cOvarian cancer in first-degree relatives

eTable 3. Pooled odds ratios (ORs) and 95% confidence intervals (CIs) for the association between breastfeeding history and invasive ovarian cancer risk by selected characteristics in the Ovarian Cancer Association Consortium

	Never breastfed		Ever breastfed		OR (95% CI) ^a	p-interaction
	Controls N (%)	Cases N (%)	Controls N (%)	Cases N (%)		
Age						0.09
≤ 50 years	1,015 (23)	583 (18)	3,368 (36)	1,248 (26)	0.67 (0.59-0.77)	
> 50 years	3,411 (77)	2,674 (82)	6,049 (64)	3,486 (74)	0.76 (0.71-0.82)	
Body Mass Index^b						0.50
<25 kg/m ²	3,841 (90)	2,784 (90)	8,287 (92)	4,012 (91)	0.78 (0.72-0.83)	
25-<30 kg/m ²	290 (7)	249 (8)	567 (6)	327 (7)	0.76 (0.59-0.96)	
≥30 kg/m ²	114 (3)	71 (2)	136 (2)	69 (2)	0.86 (0.52-1.43)	
Endometriosis						0.23
No	4,048 (94)	2,894 (92)	8,585 (95)	4,156 (93)	0.75 (0.70-0.80)	
Yes	240 (6)	250 (8)	496 (5)	329 (7)	0.66 (0.52-0.85)	
Family history of ovarian cancer						0.18
No	3,258 (96)	2,282 (93)	7,314 (97)	3,484 (93)	0.75 (0.70-0.81)	
Yes	121 (4)	161 (7)	216 (3)	249 (7)	0.88 (0.62-1.23)	
Race						0.01
White	3,933 (89)	2,917 (90)	8,403 (89)	4,119 (87)	0.73 (0.69-0.79)	
Black	245 (6)	147 (5)	208 (2)	129 (3)	0.92 (0.66-1.29)	
Asian	120 (3)	103 (3)	432 (5)	292 (6)	0.81 (0.58-1.12)	

^aAdjusted for age, race, OC use, parity, birth decade, and study site, excluding the stratifying variable.

^bBMI in young adulthood

eTable 4. Pooled odds ratios (ORs) and 95% confidence intervals (CIs) for the association between age and time since breastfeeding and invasive ovarian cancer risk in the Ovarian Cancer Association Consortium

	All invasive			High-grade serous	
	Controls N (%)	Cases N (%)	OR (95%CI) ^a	Cases N (%)	OR (95%CI) ^a
Age at first breastfeeding episode^{b,c}					
Never breastfed	4,426 (32)	3,257 (41)	1.00 (Ref)	1,978 (42)	1.00 (Ref)
<25 years	4,271 (32)	2,393 (30)	0.86 (0.79-0.93)	1,411 (30)	0.81 (0.74-0.90)
25-<30 years	2,962 (21)	1,379 (17)	0.77 (0.70-0.84)	786 (17)	0.78 (0.69-0.87)
≥30 years	2,158 (16)	937 (12)	0.74 (0.66-0.82)	528 (11)	0.78 (0.68-0.89)
p-trend ^d			0.001		0.11
p-trend ^{d,g}			0.14		0.56
Age at last breastfeeding episode^{e,f}					
Never breastfed	4,426 (32)	3,257 (41)	1.00 (Ref)	1,978 (42)	1.00 (Ref)
<25 years	1,816 (13)	1,184 (15)	0.92 (0.84-1.01)	684 (15)	0.88 (0.79-0.98)
25-<30 years	2,745 (20)	1,428 (18)	0.78 (0.72-0.86)	803 (17)	0.76 (0.68-0.84)
30-<35 years	2,840 (21)	1,310 (16)	0.75 (0.68-0.83)	761 (16)	0.77 (0.69-0.87)
≥35 years	1,996 (14)	787 (10)	0.67 (0.59-0.77)	477 (10)	0.72 (0.62-0.84)
p-trend ^d			0.02		0.15
p-trend ^{d,g}			0.26		0.60
Time since last breastfeeding episode^e					
Never breastfed	4,426 (32)	3,257 (41)	1.00 (Ref)	1,978 (42)	1.00 (Ref)
<10 years	1,315 (10)	332 (4)	0.56 (0.47-0.66)	115 (2)	0.44 (0.35-0.57)
10-<20 years	1,975 (14)	807 (10)	0.75 (0.66-0.84)	442 (9)	0.78 (0.67-0.91)
20-<30 years	2,299 (17)	1,232 (15)	0.86 (0.78-0.95)	716 (15)	0.86 (0.76-0.97)
≥30 years	3,802 (28)	2,338 (29)	0.83 (0.77-0.90)	1,452 (31)	0.80 (0.73-0.89)
p-trend ^d			0.02		0.05

^aAdjusted for age, race, OC use, parity, birth decade, study site, and total duration of breastfeeding

^bAdditionally adjusted for age at first birth

^cRange of age at first breastfeeding: 15-48 years

^dAmong women having ever breastfed

^eAdditionally adjusted for age at last birth

^fRange of age at last breastfeeding: 15-52 years

^gMutually adjusted for age at first and last breastfeeding episode

eTable 5. Pooled odds ratios (ORs) and 95% confidence intervals (CIs) for the association between age and time since breastfeeding and invasive ovarian cancer risk among women with 2 births in the Ovarian Cancer Association Consortium

	All invasive			High-grade serous	
	Controls N (%)	Cases N (%)	OR (95%CI) ^a	Cases N (%)	OR (95%CI) ^a
Age at first breastfeeding episode^{b,c}					
Never breastfed	1,726 (31)	1,257 (41)	1.00 (Ref)	765 (43)	1.00 (Ref)
<25 years	1,352 (25)	748 (25)	0.86 (0.75-0.99)	421 (24)	0.80 (0.67-0.95)
25-<30 years	1,379 (25)	630 (21)	0.79 (0.68-0.91)	342 (19)	0.75 (0.62-0.89)
≥30 years	1,027 (19)	402 (13)	0.72 (0.60-0.86)	241 (14)	0.76 (0.61-0.95)
p-trend ^d			0.001		0.08
p-trend ^{d,g}			0.05		0.27
Age at last breastfeeding episode^{e,f}					
Never breastfed	1,726 (31)	1,257 (41)	1.00 (Ref)	765 (43)	1.00 (Ref)
<25 years	674 (12)	420 (14)	0.92 (0.78-1.08)	241 (14)	0.86 (0.71-1.05)
25-<30 years	1,249 (23)	613 (20)	0.79 (0.68-0.91)	330 (19)	0.73 (0.61-0.87)
30-<35 years	1,169 (21)	494 (16)	0.75 (0.63-0.88)	270 (15)	0.73 (0.60-0.89)
≥35 years	666 (12)	253 (8)	0.68 (0.54-0.85)	163 (9)	0.76 (0.58-1.00)
p-trend ^d			0.14		0.33
p-trend ^{d,g}			0.90		0.99
Time since last breastfeeding episode^{e,f}					
Never breastfed	1,726 (31)	1,257 (41)	1.00 (Ref)	765 (43)	1.00 (Ref)
<10 years	593 (11)	151 (5)	0.62 (0.47-0.82)	66 (4)	0.59 (0.41-0.86)
10-<20 years	882 (16)	337 (11)	0.74 (0.61-0.90)	192 (11)	0.77 (0.60-0.98)
20-<30 years	1,015 (19)	516 (17)	0.84 (0.72-0.99)	286 (16)	0.78 (0.64-0.94)
≥30 years	1,268 (23)	776 (26)	0.82 (0.72-0.95)	460 (26)	0.78 (0.66-0.92)
p-trend ^d			0.15		0.09

^aAdjusted for age, race, OC use, parity, birth decade, study site, and total duration of breastfeeding

^bAdditionally adjusted for age at first birth

^cRange of age at first breastfeeding: 15-48 years

^dAmong women having ever breastfed

^eAdditionally adjusted for age at last birth

^fRange of age at last breastfeeding: 15-52 years

^gMutually adjusted for age at first and last breastfeeding episode

eFigure. Cross-classification of parity and breastfeeding in relation to invasive ovarian cancer and high-grade serous ovarian cancer risk in the Ovarian Cancer Association Consortium

