



Alcohol consumption by breastfeeding mothers:

Frequency, correlates, and infant outcomes

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Alcohol and Breastfeeding: Background



- **~47% of Australian women consume alcohol** while breastfeeding, typically at low-moderate levels (Giglia & Binns, 2007).
- Almost a quarter drink at levels considered risky (3-4 standard drinks per day) or high-risk (≥ 5 standard drinks per day per day)
- Concern that alcohol use whilst breastfeeding may affect infant development.
- Evidence on the strategies women use to minimise alcohol passed to infants via breastmilk is limited.
- NHMRC guidelines
- Need to better understand the frequency, correlates, and outcomes of alcohol use during lactation.



Aims

1. Examine the **frequency of alcohol use during breastfeeding, and management strategies** used to minimise adverse effects;
2. Compare the **demographic characteristics** of those who drink while breastfeeding with those who abstain;
3. Examine the **relationship between alcohol use during breastfeeding at 8-weeks postpartum with breastfeeding duration and infant behavioural and developmental outcomes**:
 - feeding and sleeping patterns at 8-weeks postpartum
 - social, motor and cognitive development at 8-weeks and 12-months

Method

- **Triple B Pregnancy Cohort Study** (Hutchinson et al, 2017)
- NHMRC funded longitudinal cohort (UNSW and Curtin)
- Aimed to examine the patterns and consequences of substance use in pregnant women and their partners on infant development and family functioning
- 457 women from New South Wales hospitals who gave birth to singleton babies with data at 8-weeks and 12-months
- Compared to non-participants, women were more likely to be:
 - older (32.2yrs),
 - employed (52.9%)
 - have no other children (48.7%).

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Measures

1. Demographics

2. Alcohol use

- Frequency and quantity
- Composite method, adjusted according to guidelines for alcohol consumption during breastfeeding.
- The five groups were:
 - **abstinent** (no alcohol consumption during breastfeeding period)
 - **low** (≤ 14 standard drinks per week, < 3 standard drinks per occasion)
 - **moderate** (≤ 14 standard drinks per week, ≥ 3 to < 5 standard drinks per occasion)
 - **risky** (≤ 14 standard drinks per week, ≥ 5 standard drinks per occasion)
 - **heavy** (> 14 standard drinks per week)

3. Breastfeeding

- Breastfeeding duration (≤ 6 months or > 6 months duration)
- Breastfeeding problems

Measures

4. Infant feeding and sleeping behaviour

- *Infant feeding*:
 - No. of milk feeds in a day (≤ 6 milk feeds a day or ≥ 7 milk feeds a day);
 - ratings of the infant feeding behaviour (scale: 1-poor to 10-excellent).
- *Infant sleep*: typical frequency and duration of sleep in a 24 hour period

5. Child development

- Ages and Stages Questionnaires, Third Edition (ASQ-3/SE)
 - **communication**
 - **gross motor**
 - **fine motor**
 - **problem solving**
 - **personal-social interactions**
 - **social-emotional functioning**
- Scores on the ASQ were classified as: above cut-off (indicating typical development); below cut-off (requiring further referral); or within the monitoring zone (requiring later follow-up screening).

Analysis Plan

Potential confounders:

- Socio-demographics
- Infant birth outcomes
- Drinking, smoking, illicit drug use and caffeine use in pregnancy
- Postpartum smoking, illicit drug use and caffeine use at 8-weeks and 12-months
- Maternal mental health:
 - Edinburgh Postnatal Depression Scale (EPDS) (Cox et al., 1987); and,
 - Anxiety subscale of the Depression, Anxiety and Stress Scale (Lovibond & Lovibond, 1995).

Analyses:

- Logistic regression and general linear model analyses:
 - characteristics of women who drank during breastfeeding
 - association between alcohol use during breastfeeding and infant outcomes with abstaining women as a reference group, while controlling for potential confounders.

Results – Breastfeeding & Alcohol Use

- 98.5% (n=450) had commenced breastfeeding after birth
- 91.1% of the breastfeeding group (n=410) did so for at least 8-weeks
- 45.9% (n=206) reported breastfeeding for 12-months or longer
- Alcohol use was reported by 60.7% and 69.6% of breastfeeding women at 8-weeks and 12-months postpartum
- Mean number of standard drinks per drinking occasion = 1.6 (SD=0.8), equivalent to around one glass of wine

Table 1. Prevalence of alcohol use whilst breastfeeding at 8-weeks and 12-months.

Alcohol category	8-weeks (n=402)		12-months (n=191) ^a	
	n	(%)	n	(%)
Abstinent	158	(39.3)	58	(30.4)
Low (≤1.4 standard drinks per week, and <3 standard drinks per occasion)	199	(49.5)	81	(42.4)
Moderate (≤1.4 standard drinks per week, ≥3 to <5 standard drinks per occasion)	23	(5.7)	17	(8.9)
Risky drinking (≤1.4 standard drinks per week, ≥5 standard drinks per occasion)	17	(4.2)	25	(13.1)
Heavy (>1.4 standard drinks per week)	5	(1.2)	10	(5.2)

Results – Management strategies

- Most common were delay strategies
- 95%+ women used 2 or more strategies

Table 2. Management strategies in women who consumed alcohol while breastfeeding

Management strategies	8-weeks (n=236)		12-months (n=131)	
	n	(%)	n	(%)
Used <i>one or more</i> management strategies	225	(95.3)	126	(96.2)
Waited until <i>after feeding</i>	196	(83.1)	115	(87.8)
Waited for a <i>certain time after drinking</i> to feed infant	108	(45.8)	84	(64.1)
Used only <i>formula or expressed milk</i> if drinking	62	(26.3)	30	(22.9)
Consciously <i>drank extra water</i> with alcohol use	49	(20.8)	64	(48.9)
Consciously <i>ate food</i> with alcohol use	53	(22.5)	66	(50.4)

Results – Characteristics of women who drink during breastfeeding

Table 3. Odds ratios for alcohol consumption during breastfeeding at 8-weeks postpartum by sociodemographic characteristics.

	Drinking alcohol while breastfeeding at 8-weeks postpartum		Adjusted OR (95% CI)
	Yes (n=244) N (%)	No (n=158) N (%)	
Age			
Mean (SD)	33.6 (4.1)	32.1 (4.9)	1.05 (1.00-1.11) p=.07
Country of Birth			
Australia	148 (60.7)	80 (50.6)	4.03 (2.35-6.91) p<.001
Other English speaking	58 (23.8)	11 (7.0)	10.10 (4.42-23.06) p<.001
Non-English speaking	38 (15.6)	67 (42.4)	Ref
Education			
Completed University or College	188 (77.0)	104 (65.8)	1.96 (1.15-3.33) p=.01
Other	56 (23.0)	54 (34.2)	Ref
Employment			
Full-time	135 (55.3)	69 (43.7)	1.38 (0.77-2.49) p=.28
Part-time	58 (23.8)	28 (17.7)	1.78 (0.92-3.45) p=.09
Home duties/other	51 (20.9)	61 (38.6)	Ref
Weekly household income (n=395)^a			
≥ \$2000 per week	182 (75.5)	79 (51.3)	2.04 (1.21-3.46) p=.008
< \$2000 per week	59 (24.5)	75 (48.7)	Ref
Housing			
Privately owned	121 (49.6)	64 (40.5)	1.09 (0.68-1.76) p=.72
Rental/Other	123 (50.4)	94 (59.5)	Ref
Living with partner			
No	8 (3.3)	6 (3.8)	1.54 (0.44-5.36) p=.50
Yes	236 (96.7)	152 (96.2)	Ref
Other children under mother's care			
No	151 (61.9)	91 (57.6)	1.36 (0.80-2.30) p=.25
Yes	93 (38.1)	67 (42.4)	Ref

Results – Infant outcomes



- ASQ-3 Personal-Social Interactions subscale at 12-months postpartum (OR 2.43 (1.43-4.13) $p < 0.001$).
- Infants of mothers who drank alcohol had more favourable social development scores at 12-months compared to those whose mothers abstained, after adjustment
- No other associations with feeding, sleeping or developmental outcomes at 8-weeks and 12-months

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Limitations



- Timing of alcohol consumption in relation to breastfeeding not measured
- Not know whether women were giving additional formula feeds
- Reliance on maternal self-report
- ASQ is a screening tool
- Sample size

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Conclusion



- Alcohol use while breastfeeding was common
- Most women consumed alcohol at low levels, within recommended limits
- Breastfeeding women who consumed alcohol were more likely to:
 - be born in Australia or another English-speaking country,
 - be tertiary educated, and
 - have higher household incomes.
- **Low level alcohol consumption, when combined with strategies to minimise infant alcohol ingestion, was not negatively linked to infant outcomes**
- More research is needed on moderate, risky and heavy drinkers
- Plan to replicate in the full sample and to extend to other clinical developmental measures

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Appendix: Results – Infant outcomes (Table 5)

Table 5. Relationship between alcohol use during breastfeeding at 8-weeks postpartum and outcome variables.

Outcome Variable	n (%)	Adjusted OR ^a
Milk feeds per day \geq 7		
Abstinent (n=151)	97 (64.2)	0.85 (0.55-1.32) p=.46
Consumed alcohol (n=237)	165 (69.6)	Ref
Breastfeeding duration > 6 months		
Abstinent (n=151)	112 (74.2)	0.85 (0.51-1.40) p=.52
Consumed alcohol (n=238)	191 (80.3)	Ref

Results – Infant outcomes (Table 5 cont.)

Outcome Variable	n (%)	Adjusted OR ^a
8-week ASQ^b – Monitoring Zone/Below cut-off		
<i>Communication</i>		
Abstinent (n=151)	23 (15.2)	0.74 (0.42-1.31) p=.31
Consumed alcohol (n=238)	43 (18.1)	Ref
<i>Gross motor</i>		
Abstinent (n=151)	17 (11.3)	1.16 (0.59-2.28) p=.68
Consumed alcohol (n=238)	28 (11.8)	Ref
<i>Fine motor</i>		
Abstinent (n=151)	27 (17.9)	1.09 (0.63-1.88) p=.77
Consumed alcohol (n=237)	38 (16.0)	Ref
<i>Problem solving</i>		
Abstinent (n=151)	28 (18.5)	0.92 (0.54-1.54) p=.74
Consumed alcohol (n=236)	47 (19.9)	Ref
<i>Personal-social interactions</i>		
Abstinent (n=151)	21 (13.9)	1.32 (0.69-2.55) p=.40
Consumed alcohol (n=236)	25 (10.6)	Ref

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Results – Infant outcomes (Table 5 cont.)

Outcome Variable	n (%)	Adjusted OR ^a
12-month ASQ^b – Monitoring Zone/Below cut-off		
<i>Communication</i>		
Abstinent (n=149)	19 (12.8)	0.97 (0.53-1.79) p=.93
Consumed alcohol (n=237)	31 (13.1)	
<i>Gross motor</i>		
Abstinent (n=149)	36 (24.2)	0.87 (0.53-1.42) p=.57
Consumed alcohol (n=236)	62 (26.3)	
<i>Fine motor</i>		
Abstinent (n=150)	27 (18.0)	1.24 (0.67-2.27) p=.50
Consumed alcohol (n=235)	31 (13.2)	
<i>Problem solving</i>		
Abstinent (n=147)	20 (13.6)	0.70 (0.37-1.32) p=.27
Consumed alcohol (n=230)	34 (14.8)	
<i>Personal-social interactions</i>		
Abstinent (n=149)	42 (28.2)	2.43 (1.43-4.13) p=.001
Consumed alcohol (n=234)	32 (13.7)	
<i>Social-Emotional</i>		
Abstinent (n=151)	9 (6.0)	1.11 (0.32-3.90) p=.87
Consumed alcohol (n=234)	5 (2.1)	

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Results – Infant outcomes (Table 5 cont.)

	Mean (SD)	Adjusted comparison and effect size (η^2) ^a
Sleep duration (hours per day)		
Abstinent (n=150)	14.09 (3.27)	F(1,372)=0.55, p=.46, η^2 =0.00
Consumed alcohol (n=237)	14.33 (2.24)	
Sleep frequency^c (sleeps per day)		
Abstinent (n=151)	6.46 (1.85)	F(1,381)=0.38, p=.54, η^2 =0.00
Consumed alcohol (n=238)	6.39 (1.61)	
Rating of infant feeding^c		
Abstinent (n=151)	8.70 (1.23)	F(1,378)=3.12, p=.08, η^2 =0.00
Consumed alcohol (n=236)	8.23 (1.66)	