Association between Intrapartum Interventions and Breastfeeding Duration

Dorothy Li BAI, MBBS, MPhil student, School of Nursing, University of Hong Kong
Kendra M. WU, MSE MMedSc, PhD student, School of Public Health, University of Hong Kong
Marie TARRANT, RN MPH PhD, Associate Professor, School of Nursing, University of Hong Kong

Background

- Early cessation of breastfeeding is common and exclusive breastfeeding is rare[1]
- Four of the most common intrapartum interventions
  - Induction of labour
  - Administration of opioid pain medication
  - Administration of epidural analgesia
  - Assisted deliveries
- Rates of intrapartum interventions continue to rise [2]
- Several limitations in the current documents [3-4]
  - Controversial results
  - Lack of long-term breastfeeding outcomes
  - Lack of cumulative impact of interventions

Research Objectives

The specific objectives of the study were to:

- Investigate the impact of intrapartum interventions on long-term breastfeeding outcomes among women intending to breastfeed
- Assess whether natural birth (without any intrapartum interventions) improves breastfeeding outcomes

Research Methods

- This study was conducted at four geographically distributed public hospitals in Hong Kong
- 1280 breastfeeding mother-infant pairs were included in final analysis
- **Data Sources**
  - Basic demographic data
  - Maternal and birth data
  - Breastfeeding data at 1, 2, 3, 6, 9, and 12 months or until weaned

- **Variable Descriptions**
  - Duration of any and exclusive breastfeeding
  - Four intrapartum interventions
- **Data Analysis**
  - Descriptive statistics
  - Cox Proportional Hazards modeling
  - Kaplan Meier Survival curves and log-rank test

- Ethical approval was obtained from institutional review boards overseeing the four study hospitals and informed consent was obtained

Results

- **Duration of Breastfeeding**
  - Median duration of any breastfeeding is 8 weeks
  - Median duration of exclusive breastfeeding is 2 weeks
- **Characteristics of the Participants** (Table 1)
  - Cesarean section rate was 20%
  - 34% of mothers experienced a natural birth
- **The Impact of Interventions on Breastfeeding**
  - Bivariate and Multiple Cox regression for individual intrapartum intervention (Table 2 & 3)
  - Kaplan-Meier survival curves and log-rank test
    Any breastfeeding: 9, 8, 6, 5 (weeks) (Figure 1)
    Exclusive breastfeeding: 2.9, 2, 1, 1 (weeks) (Figure 2)
  - Bivariate Cox regression for cumulative impact
    Any breastfeeding: 1.15 (95%CI: 1.08-1.22)
    Exclusive breastfeeding: 1.13 (95% CI: 1.06-1.20)
  - Multiple Cox regression for cumulative impact
    Any breastfeeding: 1.07 (95% CI 1.01-1.14)
    Exclusive breastfeeding: 1.03 (95% CI 0.97-1.10)

Table 1. Characteristics of the participants

Characteristic	Total N=1,280 N (%)
Age of mother M(SD)	31.6 (4.36)
Maternal education	
Primary or compulsory secondary[a]	303 (23.7)
Upper secondary	479 (37.4)
University degree or above	498 (38.9)
Monthly household income (HKD)[b]	
<$15,000	285 (22.3)
$15,000–$29,999	429 (33.5)
≥$30,000	566 (44.2)
Number of previous children	
None	767 (59.9)
One	450 (35.2)
Two or more	63 (4.9)
Previous breastfeeding experience	
No	853 (66.6)
Yes	427 (33.4)
Mother planning to exclusively breastfeed	
No	467 (36.5)
Yes	813 (63.5)
Returning to work post-partum	
No	337 (26.3)
Yes	943 (73.7)
Onset of labour	
Spontaneous	715 (55.9)
Induced	454 (35.5)
None (planned cesarean section)	111 (8.7)
Opioid pain medication during labour	
No	903 (70.6)
Yes	377 (29.5)
Epidural analgesia for labour pain relief	
No	1,139 (89.0)
Yes	141 (11.0)
Delivery type	
Spontaneous vaginal delivery	925 (72.3)
Assisted vaginal delivery	100 (7.8)
Planned cesarean section	111 (8.7)
Emergency cesarean section	144 (11.3)
Intrapartum interventions	
None (natural birth)	435 (34.0)
One	501 (39.1)
Two	224 (17.5)
Three	102 (8.0)
Four	18 (1.4)

[a] Compulsory secondary education is to Form 3 or Grade 9.
[b] 1 USD = 7.78 HKD

Table 2. Unadjusted HRs for cessation of any and exclusive breastfeeding by intrapartum interventions

	Any breastfeeding			Exclusive breastfeeding		
Intrapartum variables	HR	(95% CI)	*P* value	HR	(95% CI)	*P* value
Onset of labour						
Spontaneous	1	--	--	1	--	--
Induced	1.24	(1.09, 1.41)	.001	1.23	(1.08, 1.39)	.002
None (planned c-section)	0.95	(0.76, 1.18)	.65	1.19	(0.97, 1.48)	.10
Opioid pain medication during labor						
No	1	--	--	1	--	--
Yes	1.21	(1.06, 1.37)	.004	1.10	(0.96, 1.25)	.17
Epidural analgesia for labour pain relief						
No	1	--	--	1	--	--
Yes	1.20	(1.00, 1.45)	.054	1.18	(0.98, 1.42)	.08
Delivery type						
SVD	1	--	--	1	--	--
Assisted vaginal delivery	1.11	(0.89, 1.38)	.35	1.21	(0.97, 1.50)	.09
Planned c-section	0.90	(0.73, 1.12)	.36	1.15	(0.94, 1.42)	.18
Emergency c-section	1.22	(1.01, 1.48)	.04	1.25	(1.05, 1.51)	.02

HR, hazard ratio; SVD, Spontaneous vaginal delivery; c-section, cesarean section

Table 3. Adjusted HRs for cessation of any and exclusive breastfeeding by intrapartum interventions

	Any breastfeeding			Exclusive breastfeeding		
Intrapartum variables	aHR[a]	(95% CI)	*P* value	aHR[a]	(95% CI)	*P* value
Induction of labor						
No	1	--	--	1	--	--
Yes	1.08	(0.95, 1.23)	.24	1.03	(0.91, 1.17)	.63
Opioid pain medication during labor						
No	1	--	--	1	--	--
Yes	1.10	(0.96, 1.25)	.17	0.98	(0.86, 1.12)	.81
Emergency cesarean section						
No	1	--	--	1	--	--
Yes	1.07	(0.89, 1.29)	.52	1.02	(0.84, 1.23)	.84

HR, hazard ratio
[a]Adjusted for maternal age, maternal education, household income, previous breastfeeding experience, intention to exclusively breastfeed, and returning to work

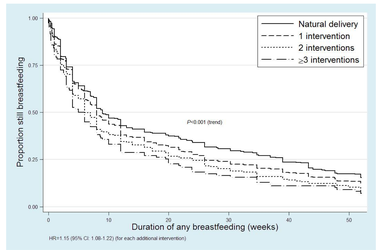

Figure 1: Kaplan-Meier survival estimates of the duration of any breastfeeding by number of intrapartum interventions

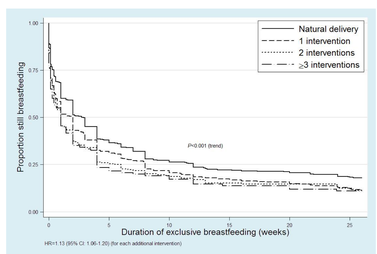

Figure 2: Kaplan-Meier survival estimates of the duration of exclusive breastfeeding by number of intrapartum interventions

Discussion and Conclusion

- **Individual intrapartum interventions do not appear to shorten breastfeeding duration**

- **Mothers experiencing multiple intrapartum interventions have significantly reduced breastfeeding duration**

- **Clinical Implications**
  In the immediate postpartum period, it is important to indentify these women so that they can receive early and additional Breastfeeding support to improve their breastfeeding outcomes
- **Research Implications**
  Future research should focus on mothers who experience multiple interventions so these relationships can be further understood

References

1. Tarrant M, Fong DY, Wu KM, et al. Breastfeeding and weaning practices among Hong Kong mothers: a prospective study. *BMC Pregnancy Childbirth.* 2010;10:27
2. Prior E, Santhakumaran S, Gale C, Philipps LH, Modi N, Hyde MJ. Breastfeeding after cesarean delivery: a systematic review and meta-analysis of world literature. *The American journal of clinical nutrition.* 2012;95(5):1113-1135
3. Wiklund I, Norman M, Uvnas-Moberg K, Ransjo-Arvidson A-B, Andolf E. Epidural analgesia: breast-feeding success and related factors. *Midwifery.* Apr 2009;25(2):e31-38
4. Perez-Rios N, Ramos-Valencia G, Ortiz AP. Cesarean delivery as a barrier for breastfeeding initiation: the Puerto Rican experience. *Journal of Human Lactation.* Aug 2008;24(3):293-302

Acknowledgement

Funding for this study was provided by Health and Health Services Research Fund, Government of the Hong Kong Special Administrative Region (Grant: #05060721), the University of Hong Kong, Hong Kong SAR (Grant: #10207306), and the University of Hong Kong Strategic Research Theme of Public Health, and the School of Nursing, University of Hong Kong