Does Childbirth Type Impact Breastfeeding Self Efficacy and Outcome?

Candice Sullivan, PhD, RN-BC, RNC-OB, C-EFM
National Breastfeeding Goals

• Healthy People 2020
  • 82% breastfeeding initiation
  • 46% exclusively breastfeeding at 3 months of age
  • 25% exclusively breastfeeding at 6 months of age

• Current Rates – CDC 2011
  • 74.6% breastfeeding initiation
  • 35% exclusive breastfeeding at 3 months of age
  • 14.8% exclusive breastfeeding at 6 months of age
National Breastfeeding Goals

- Healthy People 2020
  - 82% breastfeeding initiation
  - 46% exclusively breastfeeding at 3 months of age
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Maternity Practices in Infant Nutrition and Care

- Survey by the CDC every two years
- Provides specific opportunities to improve mother and infant care in hospitals
- Virginia ranks 31st out of 52 states surveyed
- Supportive hospital practices
  - Skin to skin contact
  - Teaching about breastfeeding
  - Early and frequent breastfeeding
  - Exclusive breastfeeding
  - Rooming-in
  - Active follow-up after discharge
Specific Recommendations

- Infant is placed skin to skin within one hour of birth for vaginal births and within 2 hours of birth for cesarean births
- Infant spends at least 30 minutes skin to skin
- Breastfeeding is initiated within one hour of birth for vaginal births and within 2 hours for cesarean births
- Supplemental feedings are avoided unless medically indicated
- Infant rooms in with the mother 24 hours a day with only brief visits to the nursery
Concerns with Cesarean Birth

- Delays initiation of breastfeeding
- Less skin to skin contact
- Less opportunities to room in with the infant
- More supplements of formula
- More pain and pain medicines
- Self confidence?
Cesarean Birth Rates

- CDC 32.8% - 2012
- Inova Fairfax Hospital 45.9% - 2013
- Primary Cesarean Births (Risk Adjusted) 19.2%
Study Purpose

- To evaluate the impact of unplanned cesarean section on breastfeeding self-efficacy and outcomes for first-time mothers when they have experienced breastfeeding support similar to mothers who deliver vaginally.
Theory

- Bandura: Social Cognitive Theory
  - Intentionality: Proactive determination to cause a specific action or behavior to occur
  - Forethought: Goal setting and anticipation, selection of courses of action that are likely to produce the outcome they seek. Provides direction, understanding and meaning
  - Self reflection: Motivation and self regulation, the ability to design courses of action and to motivate oneself to implement the plan

- Dennis: Breastfeeding Self Efficacy Theory
  - Enhancing the new mothers ability to master the techniques of breastfeeding, role modeling, and feedback.
Study Population

- First time mothers
- Two Groups:
  - Unplanned Cesarean Births & Vaginal Births
  - No medical complications
- Term infants 39 weeks gestation or more without medical complications
- Survey in first 24 to 48 hours then at 10 days postpartum and again at 8 weeks
Data Collection

- First time mothers were contacted 24-48 hours following delivery to see if they would be interested in participating in the study.
- If they were interested, the researcher explained the study, obtained the informed consent, and collected the data.
- The mother was mailed an additional survey to determine breastfeeding outcomes and breastfeeding self-efficacy at 10 days and again at 8 weeks postpartum.
Results

• Response Rate: Very few mothers refused!
• Surveys were collected on Monday-Wednesday and Fridays
• Started Collecting Data in December 2012
• 250 initial surveys by May 17th
• Sent out 10 day postpartum and 8 week surveys
• Last surveys sent on July 12
• Mothers had two months to return surveys
<table>
<thead>
<tr>
<th>Variable</th>
<th>Study</th>
<th>Vaginal Delivery</th>
<th>Cesarean Section</th>
<th>CDC Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin-to-skin contact</td>
<td>76%</td>
<td>89.4%</td>
<td>63.5%</td>
<td>100%</td>
</tr>
<tr>
<td>Within 1 hour</td>
<td>75.6%</td>
<td>92.7</td>
<td>60%</td>
<td>100% Vaginal Deliveries</td>
</tr>
<tr>
<td>Within 2 hours</td>
<td>88.8%</td>
<td>98.4</td>
<td>80.2%</td>
<td>100% Cesarean Deliveries</td>
</tr>
<tr>
<td>Length</td>
<td>62.4% at 30 Minutes or more</td>
<td>60.9</td>
<td>74.8</td>
<td>100% at 30 Minutes or more</td>
</tr>
<tr>
<td>Nurse within 1 hour of birth</td>
<td>33.6%</td>
<td>49.6%-1hr</td>
<td>18.3%-1hr</td>
<td>100%</td>
</tr>
<tr>
<td>Limited supplements</td>
<td>56%</td>
<td>62.6%-none</td>
<td>50.4%-none</td>
<td>No Supplements Unless Medically Indicated</td>
</tr>
<tr>
<td>Rooming-in 24 hours a day</td>
<td>58%</td>
<td>61.5%</td>
<td>55.6%</td>
<td>100%</td>
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</tbody>
</table>
Response Rate

- Response Rates were low: Ten days 124 surveys returned
- 8 weeks 119
- Of these only 93 complete data sets were available.
- The data sets were divided between cesarean births and vaginal births
- 48 Vaginal Births and 43 Cesarean Births
Breastfeeding Outcomes

- Full 100% (57% Vaginal Births and 44% cesarean births)
- Partial 80% only 1-2 non breast feedings per day (14% Vaginal Births 22% Cesarean Births)
- Medium 20-80% of feedings or 3-7 non breast feedings per day (14 Vaginal Births, 27 Cesarean Births)
- Low <20% of feedings 8 or more non breast feedings per day (14% vaginal births, 5% cesarean births)

» Labbok and Krasovec (1990)
### Breastfeeding Outcomes at 10 Days by Delivery Type (n = 93)

<table>
<thead>
<tr>
<th></th>
<th>Full</th>
<th>Partial</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginal</td>
<td>60.4%</td>
<td>14.6%</td>
<td>14.6%</td>
<td>10.4%</td>
</tr>
<tr>
<td>Cesarean</td>
<td>48.9%</td>
<td>24.4%</td>
<td>22.2%</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

### Breastfeeding Outcomes at 8 Weeks by Delivery Type (n = 93)

<table>
<thead>
<tr>
<th></th>
<th>Full</th>
<th>Partial</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginal</td>
<td>57.4%</td>
<td>14.1%</td>
<td>14.8%</td>
<td>14.8%</td>
</tr>
<tr>
<td>Cesarean</td>
<td>44.8%</td>
<td>22.4%</td>
<td>27.6%</td>
<td>5.2%</td>
</tr>
</tbody>
</table>
Breastfeeding Self-Efficacy

• Out of a possible 70 points
• Vaginal Births: Mean Scores
  • 44 at 24-48 hours postpartum
  • 50 at ten days
  • 52 at eight weeks postpartum

• Cesarean Births: Mean Scores
  • 45 at 24-48 hours postpartum
  • 48 at ten days
  • 50 at eight weeks
Does type of delivery, skin to skin contact, time of first feeding, number of supplemental feedings, and hours rooming in with the infant predict breastfeeding self efficacy for first time mothers at 24 to 48 hours, ten days and eight weeks postpartum.

The variables accounted for only 6% of the variance in the scores.

None of the variables significantly predicted breastfeeding self efficacy or outcomes at the initial survey (24-48 hours).

Rooming in was correlated at <.05 with all of the variables.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Initial BFSE</th>
<th>Delivery type</th>
<th>Skin-to-skin</th>
<th>Time to nurse</th>
<th>Formula feedings</th>
<th>Rooming-in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial BFSE</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Delivery type</td>
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<td>1.000</td>
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</tr>
<tr>
<td>Skin-to-skin</td>
<td>.138</td>
<td>-.184</td>
<td>1.000</td>
<td></td>
<td></td>
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<tr>
<td>Time to nurse</td>
<td>-.093</td>
<td>.198</td>
<td>-.274</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formula feedings</td>
<td>-.097</td>
<td>.230</td>
<td>-.068</td>
<td>.289</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Rooming-in</td>
<td>.096</td>
<td>-.033*</td>
<td>.005*</td>
<td>.014*</td>
<td>.045*</td>
<td>1.000</td>
</tr>
</tbody>
</table>

*indicates values were significant at <.05 level
## Correlation matrix for Research question at 10 days Postpartum

<table>
<thead>
<tr>
<th>Variable</th>
<th>BFSE 10 days</th>
<th>Delivery mode</th>
<th>Skin-to-skin</th>
<th>Time to Nurse</th>
<th>Formula Feedings</th>
<th>Rooming-in</th>
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<tr>
<td>BFSE 10 days</td>
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<tr>
<td>Delivery Mode</td>
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<td>1.000</td>
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<tr>
<td>Skin-to-skin</td>
<td>.074</td>
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<td>1.000</td>
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<tr>
<td>Time to Nurse</td>
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<td>.198</td>
<td>-.274</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formula Feedings</td>
<td>-.081</td>
<td>.230</td>
<td>-.068</td>
<td>.289</td>
<td>1.000</td>
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<tr>
<td>Rooming-in</td>
<td>.004*</td>
<td>-.033*</td>
<td>.005*</td>
<td>.014*</td>
<td>.045*</td>
<td>1.000</td>
</tr>
</tbody>
</table>

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## Correlation Matrix at 8 weeks Postpartum

<table>
<thead>
<tr>
<th>Variable</th>
<th>BFSE 8 weeks</th>
<th>Delivery mode</th>
<th>Skin-to-skin</th>
<th>Time to Nurse</th>
<th>Formula Feedings</th>
<th>Rooming-in</th>
<th>BFSE Initial</th>
</tr>
</thead>
<tbody>
<tr>
<td>BFSE 8 weeks</td>
<td>1.000</td>
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<td>Delivery mode</td>
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<td>1.000</td>
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<tr>
<td>Skin-to-skin</td>
<td>.035*</td>
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<td>1.000</td>
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</tr>
<tr>
<td>Time to Nurse</td>
<td>-.287</td>
<td>.198</td>
<td>-.274</td>
<td>1.000</td>
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<tr>
<td>Formula Feedings</td>
<td>-.199</td>
<td>.230</td>
<td>-.068</td>
<td>.289</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rooming-in</td>
<td>-.025*</td>
<td>-.033*</td>
<td>.005*</td>
<td>.014*</td>
<td>.045*</td>
<td>1.000</td>
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<tr>
<td>BFSE Initial</td>
<td>.416</td>
<td>.011*</td>
<td>.138</td>
<td>-.093</td>
<td>-.097</td>
<td>.096</td>
<td>1.000</td>
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</tbody>
</table>

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Eight weeks Postpartum

- Multiple Regression: mPINC variables and the initial BFSE score predicted BFSE score at 8 weeks postpartum.

- Results of the regression indicated the predictors predicted 26% of the variance, $R^2 = .256, F(5,87) = 4.934, p < .05$.

- The initial BFSE score and the time to first nursing the infant predicted BFSE scores at 8 weeks postpartum.
Research Question #2

- Do first time mothers who deliver by unplanned cesarean section and those who deliver vaginally have different breastfeeding self efficacy at ten days postpartum?

- Statistical measurement: One way ANOVA. The mean BFSE-SF score between women who deliver by unplanned cesarean section and those who deliver vaginally were compared initially then again at ten days postpartum to see if there is a significant difference in self efficacy by delivery type.

- No significant differences were found
Research Question #3

- What combination of mPINC variables and delivery mode best predicts breastfeeding outcome among first time mothers at ten days and eight weeks postpartum?
- Breastfeeding outcomes are defined as full, partial, medium and low.
- Multiple regression was performed and the model was able to account for 17% of the variance with these predictors.
- The number of non breast milk feedings in the first 24-48 hours postpartum significantly predicted breastfeeding outcomes at ten days postpartum.
- None of the predictors were significant at predicting outcomes at eight weeks postpartum.
# Correlation Matrix at 10 days Postpartum

<table>
<thead>
<tr>
<th>Variable</th>
<th>Breastfeeding Category</th>
<th>Delivery Mode</th>
<th>Skin-to-skin</th>
<th>Time to Nurse</th>
<th>Formula Feedings</th>
<th>Rooming-in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breastfeeding Category</td>
<td>1.000</td>
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<td></td>
<td></td>
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<tr>
<td>Delivery Mode</td>
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<tr>
<td>Skin-to-skin</td>
<td>-0.012*</td>
<td>-0.184</td>
<td>1.000</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Time to Nurse</td>
<td>0.116</td>
<td>0.198</td>
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<tr>
<td>Formula Feedings</td>
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<tr>
<td>Rooming-in</td>
<td>0.200</td>
<td>-0.033*</td>
<td>0.005*</td>
<td>0.014*</td>
<td>0.045*</td>
<td>1.000</td>
</tr>
</tbody>
</table>

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Regression results

- The overall model could account for 17% of the variance
- \( F = 3.673 \ (5, \ 87), \ p < .005 \)
- The individual predictor of the number of formula feedings given in the first 24 to 48 hours postpartum significantly predicted breastfeeding outcomes (\( \beta = .369, \ p < .005 \)) 10 days postpartum,
# Correlation Matrix 8 Weeks Postpartum

<table>
<thead>
<tr>
<th>Variable</th>
<th>Breastfeeding category</th>
<th>Delivery mode</th>
<th>Skin-to-skin</th>
<th>Time to Nurse</th>
<th>Formula feedings</th>
<th>Rooming-in</th>
<th>Initial BFSE</th>
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</thead>
<tbody>
<tr>
<td>Breastfeeding</td>
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<td></td>
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<tr>
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<td>1.000</td>
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<td></td>
<td></td>
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<tr>
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<td>-0.184</td>
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<tr>
<td>Skin-to-skin</td>
<td>0.031*</td>
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<td>1.000</td>
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</tr>
<tr>
<td>Time to Nurse</td>
<td>0.138</td>
<td>0.198</td>
<td>-0.274</td>
<td>1.000</td>
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<tr>
<td>Formula Feedings</td>
<td>0.295</td>
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<td>-0.068</td>
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<tr>
<td>Rooming-in</td>
<td>0.007*</td>
<td>-0.033*</td>
<td>0.005*</td>
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<td>0.045*</td>
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<tr>
<td>Initial BFSE</td>
<td>-0.143</td>
<td>0.011*</td>
<td>0.138</td>
<td>-0.093</td>
<td>-0.097</td>
<td>0.096</td>
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</tr>
</tbody>
</table>

*indicates values were significant at <.05 level
Simultaneous Multiple Regression used to see if any of the variables significantly predicted breastfeeding outcomes at 8 weeks postpartum.

None of the variables successfully predicted breastfeeding outcomes at 8 weeks postpartum.

The overall model was not significant ($R^2 = .110$, $F(6,86) = 1.765$, $p > .05$) and the model was only able to account for 11% of the variance with the proposed predictors.
Research Question #4

• Is there a difference in breast feeding outcome at eight weeks postpartum between first time mothers delivering vaginally and those delivering by cesarean section when adjusted for BFSE at ten days postpartum?

• Statistical measurement: ANCOVA

• The delivery type was not significant. Mothers delivering vaginally did not differ on breastfeeding outcomes from those who delivered by cesarean section when adjusted for BFSE scores at ten days postpartum.
Research Question #5

• Is there a relationship between mode of delivery and breastfeeding outcomes at ten days and eight weeks postpartum?
• Statistical measurement: Chi Square
• There was no statistical relationship between the type of delivery and breastfeeding outcomes at ten days or eight weeks postpartum
• 64% of mothers were exclusively breastfeeding at ten days postpartum (both types of delivery)
• At eight weeks postpartum 60% of vaginal births were exclusively breastfeeding and 48% of the cesarean births were exclusively breastfeeding.
Conclusions

- Overall, 64% of the mothers who had a vaginal delivery were exclusively breastfeeding at 10 days postpartum compared to 64% of the mothers who delivered by cesarean section.
- At 8 weeks postpartum, 60% of mothers delivering vaginally were exclusively breastfeeding compared to 48.9% of cesarean section mothers.
Conclusions

• There was no impact of the type of delivery on breastfeeding outcomes at 10 days or 8 weeks postpartum when adjusted for breastfeeding self-efficacy.

• There was a significant impact of formula feeding and breastfeeding outcomes at 10 days postpartum, but by 8 weeks postpartum the impact of those early supplements seemed to have faded.
Clinical Significance

- Cesarean Birth Mothers are getting good support but not ideal support for breastfeeding.
- There is a need for increased efforts with skin to skin contact for all mothers and helping them to initiate breastfeeding within the first hour.
- Further Research
  - To evaluate interventions to support mothers confidence in her ability to nurse her infant.
  - Evaluate the nurse’s ability to build the mothers confidence in the antenatal, intrapartum and postpartum periods.