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**The Relationship between Baseline Self-Efficacy and Breastfeeding Duration**

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**Abstract**

**The Relationship between Baseline Self-Efficacy and Breastfeeding Duration**

**Background:** Breastfeeding is recommended as the optimal feeding method for infants for the first 12 months of life (American Academy of Pediatrics, 1997). However, breastfeeding rates fall below the targets set by Healthy People 2010. One factor that plays a role in breastfeeding success and may be modifiable by nursing intervention is maternal self-efficacy.

**Purpose:** To examine relationships among socio-demographic variables, maternal self-efficacy and the duration of breastfeeding.

**Theoretical Framework:** Social Cognitive Learning Theory, Self-Efficacy.

**Design:** Descriptive, correlational

**Sample and Setting:** N = 70, southeastern North Carolina

**Measures:** Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF)

**Results:** Breastfeeding initiation rate of 69.5% and 36.7% at six months. Variables that correlated with breastfeeding duration were marital status, WIC enrollment, and in-hospital supplementation. Score on the Breastfeeding Self-Efficacy Scale was a statistically significant predictor of breastfeeding length. Reasons reported for early weaning were low milk supply, baby not satisfied, and a return to work.

**Implications:** The Breastfeeding Self-Efficacy Scale (BSES-SF) can be used as a baseline assessment tool in the hospital at delivery to assist in identifying women who are at risk for early weaning. Further research is necessary to examine how certain interventions may help foster self-efficacy and thus breastfeeding duration.

**Keywords:** Breastfeeding, Breastfeeding Duration, Self-Efficacy

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## **The Relationship between Baseline Self-Efficacy and Breastfeeding Duration**

### **Introduction**

Breastfeeding has been associated with numerous positive health outcomes for both mother and child. A large systematic review of the literature of over 400 research articles reinforced the evidence that a history of breastfeeding is associated with a reduction in the risk of acute otitis media, gastroenteritis, severe lower respiratory tract infections, atopic dermatitis, asthma, obesity, type 1 and 2 diabetes, childhood leukemia, and sudden infant death syndrome in children.<sup>1</sup> Positive health outcomes for women who breastfeed include a reduced risk of type 2 diabetes, breast and ovarian cancers, and postpartum depression.<sup>1</sup>

Position statements from professional organizations, such as the American Academy of Pediatrics (AAP),<sup>2</sup> Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN),<sup>3</sup> and the American Dietetic Association (ADA)<sup>4</sup> recognize the significant impact that breastfeeding can have on promoting health and reducing health care costs, and thus, they all support breastfeeding as the optimal method of infant nutrition. The AAP states in their recommendation on breastfeeding for healthy term infants that, "exclusive breastfeeding is sufficient to support optimal growth and development for approximately the first 6 months of life and provides continuing protection against diarrhea and respiratory tract infections. Breastfeeding should be continued for at least the first year of life and beyond for as long as mutually desired by mother and child".<sup>2p499</sup>

Despite these widely known benefits and recommendations, breastfeeding initiation and duration rates in the United States and North Carolina continue to fall short of recommended targets set forth by the Healthy People 2010 initiative.<sup>5</sup> Breastfeeding was indentified in the first set of health goals published in 1979 as an important health promotion strategy.<sup>6</sup> Currently the Healthy People 2010 document includes goals for breastfeeding duration, 75% of mothers breastfeeding directly after birth, 50% of mothers are still breastfeeding at 6 months, and 25% of mothers still breastfeeding at 1 year of age.<sup>7</sup> In 2007, the Healthy People 2010 objectives for breastfeeding were updated that addressed exclusivity of breastfeeding, recommending targets that 60% of mothers are exclusively breastfeeding through 3 months and 25% of mothers are exclusively breastfeeding through 6 months.<sup>7</sup> Even though there have been increases in breastfeeding initiation and duration over the past twenty years, none of the current national percentages of breastfeeding meet the Healthy People 2010 targets and North Carolina even lags further behind all of the current national percentages (Table 1).<sup>5</sup> Of particular concern to health care providers is the considerable lag in breastfeeding duration rates both at the national and state levels.

**Table 1**

**Comparison of Breastfeeding Rates with Healthy People 2010 Targets**

	2010 Health People 2010 Target	National	North Carolina
	% of Mothers	% of Mothers	% of Mothers
Ever breastfed	75	73.9	66.2
At 6months	50	43.4	36.7
At 12 months	25	22.7	18.9
Exclusively through 3 months	60	33.1	30.2
Exclusively through 6 months	25	13.6	13.1

Existing research has examined the relationship between many variables and their impact on whether a mother initiates breastfeeding, how long she breastfeeds, and if she partially or exclusively breastfeeds. These variables are sometimes classified as either intrinsic or extrinsic and modifiable or non-modifiable. The evidence has demonstrated the impact of non-modifiable factors, such as maternal age, parity, race/ethnicity, and economic status, on breastfeeding. Breastfeeding rates have been found to be higher among women who are Caucasian, older, with higher education, and not participating in the Women, Infants, and Children (WIC) program.<sup>8-14</sup> Intrinsic factors such as maternal attitudes, self confidence and self-efficacy demonstrate a positive

relationship with continued breastfeeding and some evidence exists that these variables may be modifiable to impact the breastfeeding experience.<sup>15-21</sup> One factor that plays a role in breastfeeding duration and may be modifiable by nursing intervention is maternal self-efficacy.<sup>22</sup> Specifically, women with a higher perceived self-efficacy for breastfeeding tend to initiate breastfeeding and persist even through challenges, whereas a woman with a lower perceived self-confidence may decide not even to initiate breastfeeding or wean prematurely due to lack of confidence or effective coping skills.<sup>22</sup>

Since the breastfeeding data for North Carolina suggests that more of our mothers are having difficulty in sustaining breastfeeding as compared with the national average, this research sought to examine the role of self-efficacy on breastfeeding duration for this population which would add supporting knowledge to the limited work that has been done on this concept. The specific aim of this study was to examine the relationships between socio-demographic variables, maternal self-efficacy and the duration of breastfeeding to determine if there is predictive value for a similar population in southeastern North Carolina.

### **Research Questions**

This study examined three research questions:

- What is the breastfeeding rate at a regional hospital in Southeastern North Carolina at delivery and through six months as compared with national and state trends?
- Is there a relationship between socio-demographic variables (such as age, Women, Infant and Children (WIC) program enrollment, smoking status, type of delivery, education, and previous breastfeeding experience) and breastfeeding duration in this population?
- Is there a relationship between baseline self-efficacy scores and breastfeeding duration in this population?

### **Theoretical Perspective**

The concept of self-efficacy, based on Albert Bandura's Social Cognitive Learning Theory, was used as the theoretical framework for this study. This theory asserts that much of human behavior is self-regulated.<sup>23,24</sup> The basic assumption underlying the theory is that individuals regulate their behavior based on their self-efficacy beliefs. Humans avoid situations that they believe they are unable to cope with successfully and they seek out situations that they believe they can successfully overcome.

Perceived self-efficacy plays a role in humans' self-regulation of behavior. Perceived self-efficacy refers to a person's beliefs about what he or she is capable of doing based on the expectations of the outcomes that will result when engaging in a certain task.<sup>23-25</sup> Perceived self-efficacy stems from numerous

sources, such as performance accomplishments, vicarious experiences, verbal persuasion, and affective or physiologic states.<sup>15,16</sup> An individual cognitively processes the information from these sources and will be influenced to make decisions and choices whether to attempt the task, how much effort to expend, how much perseverance to have, and impact their emotional reactions.

Dennis<sup>22</sup> proposed a framework, derived from Bandura's Social Cognitive Learning Theory,<sup>23</sup> for understanding the role of self-efficacy in relation to breastfeeding behaviors. Breastfeeding self-efficacy refers to a mother's perceived ability or confidence to breastfeed her newborn and influences her decisions regarding breastfeeding such as whether to breastfeed or not, how much effort she will place on breastfeeding and how she will respond to any challenges that she confronts during the experience.<sup>17,22</sup> The theory of self-efficacy proposes that a person's level of self-efficacy may be influenced by four sources of information. These sources of information include personal accomplishments, vicarious experiences, verbal persuasion, and psychological and affective states and thus may be modifiable by education and intervention by health care providers.<sup>22,23</sup> Some studies have demonstrated a positive relationship between self-efficacy and breastfeeding success thus indicating the predictive value of such screening to identified mothers at risk for early weaning which would assist staff in planning appropriate intervention.<sup>17,26</sup>

## Review of Literature

Many researchers have studied the effects of breastfeeding for both the mother and the child and what factors play a role in the initiation and duration of breastfeeding. Some factors found to influence the initiation of breastfeeding include age,<sup>27</sup> prenatal intent,<sup>17,28</sup> race and ethnicity,<sup>28</sup> educational level,<sup>27,29,31</sup> breastfeeding confidence,<sup>32</sup> smoking,<sup>13,29,30</sup> and perceived social support.<sup>29,30,33</sup> This evidence suggests that a mother is more likely to initiate breastfeeding if she is Caucasian, non-smoker, plans to breastfeed, has higher breastfeeding confidence, has perceived social support for breastfeeding, and has a higher level of education. One study done in a large metropolitan city did report a converse result in regard to the impact of race/ethnicity on breastfeeding intent. Lee, and colleagues, found that non-Hispanic African Americans in a low-income population were more likely to report that they intended to breastfeed than a group of non-Hispanic white participants.<sup>29</sup>

Some of the same factors, such as age, educational level and breastfeeding confidence also impact whether a mother initiates breastfeeding and how long she continues to breastfeed. Researchers have determined that some predictors of breastfeeding duration include self-efficacy or maternal confidence with breastfeeding,<sup>15-18,21,22,35,36</sup> educational level,<sup>13,18,19,31</sup> race/ethnicity,<sup>13,18</sup> use of formula supplementation,<sup>8,31,36</sup> age,<sup>8,13,31</sup> postpartum depression,<sup>18,32,34</sup> anxiety,<sup>15</sup> nipple trauma,<sup>21</sup> pacifier use,<sup>30</sup> early breastfeeding difficulties,<sup>18,31,33</sup> and previous successful breastfeeding experience.<sup>8,37</sup> These predictors suggest that women

with lower reported maternal confidence or self-efficacy, who use formula supplementation, have reported nipple trauma or pain, lack of experience or support with breastfeeding, tend to have a shorter length of breastfeeding. In addition to examining the impact of factors on the length of breastfeeding, several of these same factors contribute to the degree of breastfeeding. A longer duration of exclusive breastfeeding has been associated with age,<sup>38</sup> positive maternal attitudes,<sup>20</sup> self-efficacy,<sup>14,27</sup> family support,<sup>20</sup> type of delivery,<sup>36</sup> prenatal class attendance,<sup>36</sup> and breastfeeding knowledge.<sup>19</sup>

Dennis<sup>26</sup> examined the concept of self-efficacy to determine the variables which most impacted this concept at one week postpartum. Eight variables were identified, and include maternal education, support from other women with children, type of delivery, satisfaction with labor pain relief, satisfaction with labor pain relief and postpartum care, perceptions of breastfeeding progress, infant feeding as planned and maternal anxiety. These variables explained 54% of the variance in the self-efficacy scale scores at one week postpartum. In addition to these variables, older, more educated, multiparous women were more likely to score higher on a breastfeeding self-efficacy scale. Women with high stress levels and conflict with their mothers tended to score lower on the scale. Mothers who experienced deliveries that required more intense interventions (forceps, cesarean section) scored lower on the self-efficacy scale.<sup>26</sup>

Maternal self-efficacy, also referred to as breastfeeding confidence, has been shown to play an important role in both breastfeeding initiation and duration. Identification of levels of self-efficacy for breastfeeding can assist health care providers in targeting women at risk for early weaning of breastfeeding and assist in determining appropriate interventions. The following research design was used as a preliminary study to the relationship between socio-demographic variables, maternal self-efficacy, and breastfeeding duration for women in the southeastern region of North Carolina.

## **Methodology**

A descriptive, correlational design was used to recruit a convenience sample of 70 mothers who delivered at a regional hospital in southeastern North Carolina and met the inclusion criteria. Inclusion criteria consisted of planning to breastfeed, delivering a healthy, term, singleton infant receiving normal newborn care, being at least 18 years or older, and being able to understand, speak, and read English. Institutional approval was obtained from the hospital review board and the university. Of the total sample, 62 subjects (88.6%) completed the entire research study.

Potential participants for the study were identified by a lactation consultant (LC) on the postpartum unit and the LC distributed brochures and information on the study to potential participants at different times depending on their mode of delivery. Women who delivered vaginally were approached 12-24 hours after

delivery and those with a cesarean delivery at 24-48 hours post delivery. Mothers interested in participating were referred to the research team and informed consent was obtained after a verbal explanation of the study was given and any questions were addressed. Following consent, participants were asked to complete the data collection instruments at two time periods, the Time 1 data point was at 12 to 48 hours following delivery and the Time 2 data point was at 6 months following delivery. The Personal Data Form (PDF), the Breastfeeding Experience Instrument (BEI), and the Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) were completed at the Time 1 data point. Participants then completed the BEI again at the Time 2 data point at 6 months following birth to examine their breastfeeding experience and duration rates.

The Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) is a 14-item questionnaire with a possible range in scores from 14-70.<sup>39</sup> The BSES-SF consists of positive statements such as “I can always determine that my baby is getting enough milk” and “I can always be satisfied with my breastfeeding experience.” Participants were asked to rate their agreement with the statement on a Likert scale. A response of ‘1’ indicated that the participant was not at all confident and a response of ‘5’ indicated that the participant was very confident with the statement.

Dennis<sup>39</sup> reports strong reliability and evidence of construct and predictive validity for the BSES-SF. Reliability of the instrument was reported with a Cronbach alpha of .94. Construct validity was demonstrated by significant correlations between the BSES-SF and the Rosenberg Self-Esteem Scale, the Perceived Stress Scale, and the Edinburgh Postnatal Depression Scale with  $p < .001$ . Predictive validity for the BSES-SF was demonstrated by a statistically significant difference in the scores on the BSES-SF for mothers who were exclusively breastfeeding and those who were partially breastfeeding or bottle-feeding.<sup>39</sup>

### **Description of the Sample**

The mean age of the sample was 27.7 years, with a range of 18 to 40 years. The sample was mostly Caucasian (74.3%), but also consisted of African American participants (18.6%), and those of other ethnicities (7.1%). A majority of the participants (58.6%) were married and 71.5% reported some college or a college degree. Approximately 30% of the mothers classified themselves as homemakers and 41.2% of the sample were enrolled in the Women, Infants, and Children (WIC) program. The most common mode of delivery was vaginal (70%) and 47.1% of the women were primigravida. It was the first breastfeeding experience for 64.7% of the sample.

Participants were asked at what point they decided to breastfeed and it was found that 79.4% decided to breastfeed prior to becoming pregnant. Participants were asked on the initial questionnaire how long they were planning to breastfeed: 41.6% planned to breastfeed 4-6 months and 20.6% were undecided

on how long they planned to breastfeed. A subset (35.3%) of the participants planned to supplement before 6 months. Most (83.4%) of the sample said they were strongly committed to breastfeeding.

Sixty-one percent (61%) of the sample reported their husband or closest support person's attitude toward her breastfeeding was very positive. A subset (35.3%) of the sample reported their support person had a positive attitude toward breastfeeding, and 2.9% of the sample reported that their support person had a somewhat negative attitude toward breastfeeding.

### Findings: Breastfeeding Rates

- Research Question 1: What is the breastfeeding rate at a regional hospital in Southeastern North Carolina at delivery and through six months as compared with national and state trends?

Breastfeeding rates in the research sample paralleled very closely with national and state trends at delivery, 3 months, and 6 months as depicted in Figure 1. The percentage of mothers still breastfeeding at six months was very comparable at 34.6%, 36.7% and 35.1%, for North Carolina, Research Sample, and National rates respectively.

**Figure 1**

### Comparison of Breastfeeding Rates: National, NC, and Research Sample



- Research Question 2: Is there a relationship between socio-demographic variables and breastfeeding duration in this population?

## Findings: Socio-Demographic Variables

The mean length of breastfeeding for the total sample was 12.53 weeks. Two sociodemographic variables impacted breastfeeding duration at 6 months, WIC enrollment ( $t = -4.072$ ,  $p = .000$ ) and marital status ( $t = -2.359$ ,  $p = .021$ ). The mean length of breastfeeding for mothers enrolled in WIC was 6.7 weeks as compared with mothers not enrolled in WIC which was 15.95 weeks. The mean length of breastfeeding was longer for mothers who were married as compared with single mothers, 14.8 weeks and 8.9 weeks, respectively. Although not statistically significant, the mean breastfeeding length for women who were white was 13.18 weeks compared with 9.36 weeks for mothers who were African American ( $t = -1.172$ ,  $p = .246$ ).

Maternal sociodemographic factors that did not significantly impact breastfeeding duration at three or six months were smoking ( $t = -.414$ ,  $p = .681$ ); type of delivery ( $t = .130$ ,  $p = .897$ ); educational level ( $t = -1.665$ ,  $p = .101$ ); and previous breastfeeding experience ( $t = -1.225$ ,  $p = .225$ ).

### Findings: Self-Efficacy

- Research Question 3: Is there a relationship between baseline self-efficacy scores and breastfeeding duration in this population?

The primary research question addressed whether there was a relationship between baseline self-efficacy scores and the length of breastfeeding. At six months, there was a statistically significant positive correlation between baseline self-efficacy and breastfeeding duration. Mothers who scored higher on the Breastfeeding Self-Efficacy Scale (BSES-SF) breastfed longer ( $r = .264$ ,  $p = .049$ ). In addition to the correlation between the total BSES-SF score, there were five questions on the BSES-SF that positively correlated with a longer duration of breastfeeding and are depicted in Table 2.

**Table 2**

### Correlations for Questions on the BSES-SF and Breastfeeding Duration at Six Months

Item Number	Item Statement	<i>r</i> value	<i>p</i> value
1	I can always determine that my baby is getting enough milk.	.313	.019
2	I can always successfully cope with breastfeeding like I have with other	.326	.014

	challenges		
3	I can always breastfeed my baby without using formula as a supplement.	.281	.036
4	I can always ensure that my baby is properly latched on for the whole feeding.	.313	.002
6	I can always manage to breastfeed even if my baby is crying.	.318	.017

### Additional Findings

Supplementation with formula was found to impact breastfeeding duration. A subset of the sample (21.9%) supplemented with formula while still in the hospital. There was a statistically significant difference in breastfeeding length for those who supplemented and those that did not, (14.00 weeks versus 9.27 weeks,  $t = -2.10$ ,  $p = .040$ ). There was also statistically significant difference in the mean breastfeeding length for women who planned to supplement and those who did not plan to supplement before 6 months, 8.66 weeks and 9.6 weeks respectively ( $t = -2.195$ ,  $p = .037$ ).

Participants who stopped breastfeeding before 6 months were asked what influenced their decision to stop breastfeeding. Participants were able to choose more than one answer. The three most common reasons were low milk supply (40%), baby not being satisfied (42.5%) and return to work (32.5%).

### Limitations

This study did have limitations related to the sample size and methodology that should be taken into account when drawing any conclusions from the results. The first limitation is the small convenience sample and sample selection from one geographic area in southeastern North Carolina which limits generalizability. Another limitation in the sample is the diversity in regard to Hispanic ethnicity. The sample reflected the community demographics closely for two categories of race/ethnicity with the majority of the sample Caucasian mothers (76.5% as compared with 75.1% of the community) followed by African American mothers (17.6% as compared with 12.3% of the community population).<sup>40</sup> Only 2.9% of the sample reported Hispanic ethnicity which is much lower than the reported community population of 14.7%.<sup>40</sup> Another limitation related to the sample was the loss of participants due to the longitudinal design of the study over six months which may have contributed to an attrition of 11.4% for the study. To minimize

loss by attrition, mailed surveys were used in addition to phone surveys, however there is concern that the responses on the mailed surveys could not be validated as being completed by the study participant and not by someone else in the household. Efforts were made to safeguard the confidentiality and privacy of individuals during completion of phone surveys.

## Conclusions

Similar to previous work, the results of this study support the use of self-efficacy as a framework for predicting breastfeeding duration. Consistent with the literature, there was a statistically significant relationship between self-efficacy scores and the length of breastfeeding. [15.16.18.21.32.35.36](#) Mothers who scored higher on the Breastfeeding Self-Efficacy Scale at baseline did breastfeed longer. Reasons cited by the participants for early weaning were consistent with the literature, low milk supply, baby not satisfied, and a return to work. [18.21.31.41](#) In-hospital supplementation also surfaced as a significant variable impacting breastfeeding length.

This study concluded that the breastfeeding rates, and some variables impacting breastfeeding for this population in southeastern North Carolina, closely parallel those that are reported for the U.S. The sample for this study depicted a close representation of the population for the region. The breastfeeding initiation rate for the participants in the study was 69.5% and there were 36.7% of mothers still breastfeeding at six months.

Socio-demographic variables that impacted breastfeeding duration for this population at 6 months were marital status and WIC enrollment. Women who were married and not enrolled in WIC tended to breastfeed longer. Maternal sociodemographic variables that were not consistent with the literature in that they did not significantly impact breastfeeding duration at 6 months were smoking, type of delivery, educational level and previous breastfeeding experience.

This research project has important implications for practice, research, and education. For practice, the BSES-SF can be used as a baseline assessment tool in the hospital at delivery to assist health care providers in identifying women who are at risk for early weaning. Health care providers can then target these mothers who may wean early and plan strategies that foster a mother's knowledge and confidence with breastfeeding using Bandura's social learning theory. [22-24](#) Strategies for patient education and care can be designed that incorporate Bandura's four sources of information. Health care providers can design strategies to incorporate personal accomplishments, vicarious experiences, verbal persuasion, and psychological and affective states with the goal of enhancing self-efficacy and extending breastfeeding. In planning these patient care strategies it is important to incorporate a research component since there are limited studies examining the impact of theoretical-based strategies on

the level of self-efficacy. Further research is warranted to examine the impact of peer support, educational programs, professional support on the concept of self-efficacy.

In regard to implications for education, not only is patient education important in promoting breastfeeding but continued staff education and support is warranted. A finding in this study consistent with literature is that formula supplementation is frequently used prior to hospital discharge and can statistically impact breastfeeding duration. Providing education and support to staff so they can support mothers and determine the appropriateness of formula supplementation can assist in promoting confidence through knowledge and support to preserve breastfeeding. Breastfeeding provides positive health care outcomes for mothers and infants but is not without its challenges, however continued support, education, and research will foster achievement of the Healthy People 2010 targets.

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