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**Effects of an Educational Intervention on Exclusive Breastfeeding Rates in Marshallese  
Mothers Residing in the U.S.**

Thesis Presented by Connor Otto

Presented to the College of Education and Health Professions  
in partial fulfillment of the requirements  
for the degree with honors  
of Bachelor of Science in Nursing

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### *Abstract*

**Background:** The largest population of Marshallese immigrants in the Contiguous U.S. resides in Northwest Arkansas. Despite adequate access to healthcare, the Marshallese face many health disparities, perhaps partly due to the language barrier they face in healthcare settings and education. Regarding breastfeeding rates, women in the Marshall Islands have a significantly higher rate of exclusive breastfeeding than in Marshallese women residing in the U.S. who face cultural barriers. Breastfeeding is positively correlated to many benefits for infants and is recommended exclusively for at least 6 months by pediatric policy organizations.

**Objective:** The purpose of this research is to examine breastfeeding rates in Marshallese women after implementing a two part culturally significant educational intervention, including a video and a supplemental brochure, both prepared in the Marshallese language.

**Methods:** In this quasi-experimental retrospective study, data was collected and analyzed at a designated Baby-Friendly Hospital in Northwest Arkansas, pre- and post- intervention. The intervention included a seven minute long video providing techniques regarding latching skills and hand expression, as well as information regarding the benefits of breastfeeding for the mother-baby dyad and recommendations found in WHO guidelines. A second written tri-fold handout was utilized for the patients to take home to reinforce the teaching.

**Results:** Results were not statistically significant, likely due to sample size, however, there was a slight positive correlation between receiving the treatment and intent to breastfeed on discharge.

**Conclusion:** Previous and current research indicates a possible positive effect on improving breastfeeding discharge rates using culturally targeted education materials. It is hoped that the

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Baby-Friendly Hospital will continue to utilize the educational interventions to improve breastfeeding rates among the Marshallese population in Northwest Arkansas.

## **Effects of an Educational Intervention on Exclusive Breastfeeding Rates in Marshallese Mothers Residing in the U.S.**

### **Background and Significance**

The Republic of the Marshall Islands (RMI) is a sovereign country located in the Pacific Ocean about 2,136 miles southwest of Honolulu, spread over five islands (Williams & Hampton, 2005). As a former Japanese colony that became a territory of the United States after World War II, the region became the site of extensive nuclear testing and environmental research without permission from the Marshallese population (Duke, 2017). Persons near the nuclear testing sites were not relocated and subsequently were impacted by consuming contaminated plants, animals and water. These programs caused secondary health problems related to radiation, including cancer, thyroid problems and birth defects. Limited agricultural production and polluted ocean resources left the RMI dependent on U.S. foreign aid and increased the amount of canned food consumption. Dietary changes have influenced the increasing prevalence of diabetes, obesity and cardiovascular disease within the RMI community.

From 1947-1986, the Marshall Islands were controlled by the U.S., until gaining sovereignty under the Compact of Free Association. Under this act, the Marshallese Islanders are able to immigrate to the U.S. without a visa or a permanent residence card, as noncitizens. In exchange for this, the U.S. military maintains control over the ocean surrounding the islands, while also providing the country's defense (Baxter, 2018). This agreement led to dramatic growth of the Marshallese population in the U.S. Growth has continued to increase according to the Federal Census Bureau (2010), reporting 150% growth since 2000. Currently, the highest concentration of Marshallese immigrants in the continental U.S. resides in Northwest Arkansas

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(McElfish, 2016). Employment, healthcare and educational opportunities in Springdale appeal to the Marshallese population, especially the poultry industry. Like other immigrant laborers, they are willing to work for low wages, while also being desirable employees because of their legal status within the United States.

Marshallese immigrants, as noncitizens, have limited access to medicaid as legislated by the Personal Responsibility and Work Opportunity Reconciliation Act under President Clinton. However, under the Affordable Care Act, Marshallese immigrants are eligible for income-based subsidies for health insurance (National Immigration Law Center, 2014). Sixty-three percent of Marshallese individuals reported having some type of medical insurance according to a study done in Springdale, Arkansas (Jimeno, 2013). Despite adequate access to healthcare, structural and socio-cultural barriers influence Marshallese women to delay or not seek prenatal care. Negotiating health insurance, transportation, and language barriers were all major structural barriers, while a lack of understanding of the importance of seeking prenatal care was a socio-cultural barrier (Ayers et al., 2018).

The rate of breastfeeding in minority women is disproportionately affected by unique and more frequently occurring barriers (Jones, Power, Queenan, & Schulkin, 2015). Lower rates of breastfeeding tend to be present with young, lower income and less educated mothers, which are prevalent characteristics among Marshallese immigrants in Northwest Arkansas. There is also a negative correlation between the amount of time immigrants reside in the U.S. and breastfeeding duration, with lifetime residents being 2.4 times as likely to stop breastfeeding than immigrants with residence of less than 5 years (Harley, Stamm, & Eskenazi, 2007). The World Health Organization recommends at least six months of exclusive breastfeeding in order to achieve

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optimal growth and health of infants (CDC, 2016), and provides guidelines for breastfeeding support through the *Baby Friendly Hospital Initiative*, including not giving formula unless medically indicated (CDC, 2013). Infants that receive breast milk for the first year of their life are less likely to be hospitalized, overweight and to develop acute and chronic conditions within their lifetime (Horta, de Mola, & Victora, 2015). Beyond the physical benefits, breastfeeding may also enhance the mother-baby dyad relationship as facilitated by skin-to-skin contact.

English is the second official language in the RMI, however many citizens speak little to none and prefer to speak in Marshallese (Duke, 2017). Although federal public health policy focuses on the promotion of breastfeeding, education and resources are primarily directed towards English speaking mothers. With such a small population of Marshallese Islanders in the U.S., there are also limited interpreters in the hospital setting who are able to provide breastfeeding education in their preferred language. Common perceptions among all women that decrease the likelihood of exclusive breastfeeding include milk insufficiency, fear of pain and infant breast refusal (Hurley, Black, Papas, & Quigg, 2008). Teaching correct techniques and giving recommendations to relieve these worries are within lactation consultants' and nurses' scope of practice. Without appropriate communication, the patient is often discharged from the hospital without these educational needs being met and they lack the confidence to exclusively breastfeed. There is a miscommunication in the support of breastfeeding for the Marshallese mothers due to the language barrier (Scott, Shreve, Ayers, & McElfish, 2016).

While breastfeeding is increasingly viewed as important for health of the mother-baby dyad, women have continued to face significant barriers. Following maternity leave, women have a hard time finding supportive environments at work to continue breastfeeding. Milk

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expression requires time, equipment and privacy, something that workplaces in the U.S. are not structurally set up to give. Guendelman et al. (2009) found that the strongest predictor of a woman's decision to discontinue breastfeeding was returning to work within 6 weeks after birth. Another factor dissuading mothers from exclusively breastfeeding is the social perception communicated in the U.S. Bottle feeding is viewed as "normal", while breastfeeding is considered embarrassing in public. This is partly due to the fact that breasts have often been regarded primarily as sexual objects, and visual images of breasts' nurturing function are rare in American culture (U.S. Department of Health and Human Services, 2011). The women are taught that breastfeeding is best, but then see that the claim is negated by the negative stigma associated with doing so in public and the lack of accommodation from the American lifestyle (Schmied et al., 2012). Scott, Shreve, Ayers, and McElfish (2016) found that both verbal and non-verbal shaming influenced Marshallese mothers' infant feeding choices because of their desire to acculturate into the U.S.

Furthermore, the majority of Marshallese women are recipients of free formula provided by Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). WIC is designed to provide educational services and nutritional supplementation to at risk women and their children, but like other education, it is not provided in Marshallese. Previous studies have found that WIC participants have lower breastfeeding rates than non-WIC mothers (Wojcicki et al., 2010). The availability of formula is advantageous to mothers who work or have other children that require their time. This, along with the desire to acculturate and inability to balance breastfeeding and work, acts as disincentives to exclusively breastfeed as a matter of convenience (Kent, 2006).



In the Northwest Arkansas Marshallese community, families locally are extended but also remain fragmented with many family members remaining in the Marshall Islands. Scott, Shreve, Ayers, and McElfish (2016) contend that women in the family are the most influential factors in whether a woman breastfeeds. This is especially true in the Marshallese community because the family structure in the RMI is matriarchal. Even if the woman herself was breastfed, lack of female family support decreases the likelihood of maintaining breastfeeding with her own child. Marshallese women without strong matriarch support may experience lack of confidence in their ability to breastfeed and provide adequate nutrition, stemming from the insufficient amount of support and education (Chen, Wei, Yeh, & Chen, 2016).

The breastfeeding practices of Pacific Islanders residing in the U.S. are below the *Healthy People 2020* goals, while their population is expected to increase exponentially by the year 2060 (Adams et al., 2016). The purpose of this study is to examine exclusive breastfeeding rates of the Marshallese population in NW Arkansas after the implementation of a breastfeeding educational intervention directed exclusively to Marshallese mothers. This educational video provides information and techniques about breastfeeding latch, hand expression and breastfeeding in public, spoken in Marshallese. This is a replication study designed to address previous study difficulties in compliance from the nursing staff by implementing it at a hospital who conveyed interest in participating and has Breastfeeding Friendly Designation. Willingness to participate in quality improvement interventions is necessary in improving the effectiveness of compliance in health education.

### **Methods**

#### *Overview*

This study was conducted following approval from the University of Arkansas Institutional Review Board and the hospital's Quality Improvement Department. The study hospital in Northwest Arkansas expressed a desire to address cultural competency in the targeted population and has a Baby-Friendly Designation. Their expressed interest in the educational material provided a favorable environment to perform this research.

### *Design*

The design of this study is a quasi-experimental retrospective analysis examining the effects of an educational intervention on exclusive breastfeeding rates in Marshallese mothers residing in Northwest Arkansas, pre- and post- intervention. The intervention is a seven minute video providing spoken and visual techniques regarding latching skills, benefits of exclusive breastfeeding and hand expression. The video addresses breastfeeding in public with the intention to decrease the perceived stigma of public shaming. It also provides information regarding the benefits of breastfeeding for the mother-baby dyad and gives recommendations found in WHO guidelines. The original video was produced solely in Marshallese to ensure an impactful intervention for the Marshallese speaking mothers. To reinforce the video, we also utilized a second written component (tri-fold brochure produced by the Arkansas Foundation for Medical Care and Arkansas Department of Human Services) for the patients to take home, which was also translated into Marshallese. With permission from the Arkansas Foundation for Medical Care and Arkansas Department of Human Services, the brochure was translated and back-translated into Marshallese in order to create a conducive education product. Its purpose was to assist discharged mothers with any questions regarding breastfeeding. Interventions of the

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current study were aimed at enhancing knowledge that these women would historically get from female influences in the family and increasing exclusive breastfeeding rates.

### *Study Population*

Marshallese mothers at the Northwest Arkansas hospital, between 17-45 years of age, were included in the study population. Marshallese mothers who did not participate in the intervention, had babies born prior to 37 weeks gestation or were treated for hyperbilirubinemia were excluded from this study.

### *Study Procedures*

A retrospective chart review was conducted for Marshallese mothers admitted between Spring 2018 and Fall 2018. The mothers' medical records were reviewed at the time of admission and again at discharge to determine feeding intention as either: using formula exclusively, supplementing breastfeeding with formula, or breastfeeding exclusively. While in the hospital, the nurses provided the mothers with the culturally designed video and brochure. The outcome measure was the comparison of exclusive breastfeeding rates pre- and post-intervention. The hypothesis was that the medical staff promotion of breastfeeding, supplemented with the education provided, positively influenced Marshallese mothers to breastfeed their babies, despite their lack of female support from fragmented households, and would build a trusting relationships with the nurses.

Demographic data collected included the mother's age, gravidity and parity, birth weight and discharge weight of the newborn, hospital length of stay, and intent to breastfeed. Data includes the percentage of mothers who received the intervention; giving an estimate of the compliance of the nursing staff in providing the educational module. All patient information was

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de-identified in accordance to Health Insurance Portability and Accountability (HIPAA) law and all medical records were accessed within the hospital setting.

### *Timeline*

January 8th, 2018: Obtained IRB approval.

January 21st, 2018: Pre-intervention data collection began dating back to November 2017.

March 28th, 2018: Implementation of the quality improvement breastfeeding education.

April 2018- October 2018: Collection of post-intervention data through retrospective chart reviews.

### *Statistical Analysis*

The total number of charts reviewed was 141, of which yielded 99 eligible women. Of these eligible women, 25 Marshallese mother-baby dyads received the educational intervention (treatment group) and with 74 Marshallese mother-baby dyads included as the control group.

Table 1:

### *Participant Feeding Intention and Educational Intervention*

	Education Received	Education Not Received	Total
Admission			
Exclusive BF	6	12	18
Nonexclusive BF	19	62	81
Discharge			
Exclusive BF	13	20	33
Nonexclusive BF	12	54	66

\* BF: Breastfeeding

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A significance level of 0.05 was established for this study. Given that the level of measurement of the outcome data was nominal, a chi-square test of independence was conducted to determine if the two variables are related (Table 2). A chi-square test of independence was conducted between women exclusive breastfeeding and the women who chose not to exclusively breastfeed. All expected cell frequencies were greater than five. There was no statistically significant association between the groups,  $X^2(1) = 5.284$ ,  $p = .028$ . A total of 99 mothers were included in the study. This resulted 25 women receiving the educational intervention and 74 women who did not receive the intervention. At the time of discharge, of those that received the intervention 13 (52%) during their hospital stay, 12 (48%) chose non-exclusive breastfeeding upon discharge. In the control sample of women ( $N=74$ ), who did not receive the educational intervention, 20 (27%) of mothers chose to breastfeed upon admission while 54 (73%) chose to exclusively breastfeed at discharge. There was a statistically significant association between women's intent to not exclusively breastfeed at discharge and women whose preference at discharge was to breastfeed as assessed by Fisher's exact test,  $p=0.028$ .

Of note is that 78.8% of the mothers included in the study had given birth to a child previously. Studies show that previous experiences with breastfeeding are a determinant in whether a mother chooses to breastfeed or not (Emmanuel, 2015). For these multiparous women, it is possible that their previous breastfeeding choices influenced their decision more heavily than the educational intervention.

Table 2:

*Educational Intervention and Breastfeeding Intent at Discharge*

<b>Educational Intervention</b>	<b>Exclusive Breastfeeding</b>	<b>Non-exclusive Breastfeeding</b>	<b>Total</b>
Yes	13	12	25
No	20	54	74
Total	33	66	99
Pearson Chi-Square			5.284
Fisher's Exact Test			0.028

It is worthy to note the following upon analysis of the data that in the treatment group, 7 women who chose non-exclusive breastfeeding upon admission chose to exclusively breastfeed at discharge while 1 mother who chose to both breastfeed with supplementation chose to not breastfeed at discharge. In the non-treatment group, 10 mothers who chose to supplement breastfeeding upon admission change to exclusively breastfeed at discharge and 1 mother who chose not to breastfeed upon admission chose to exclusively breastfeed upon discharge. Three women in the non-educational intervention group who chose to breastfeed upon admission change to breastfeeding with supplementation at discharge.

*Discussion*

Since the WHO/UNICEF Baby-Friendly Hospital Initiative was launched in 1991, there has been an increase in exclusive breastfeeding rates which is reflected in improved health and a decrease in mortality rates (Saadeh, 2012). Despite these improvements, breastfeeding rates among minority women remain low. Minority women are disproportionately affected by adverse health outcomes, which may improve with breastfeeding, so it is important to provide targeted interventions to increase these rates (Jones, Power, Queenan, & Schulkin, 2015). This

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intervention was implemented to examine the effects of an educational and culturally conscious video and pamphlet on breastfeeding rates in Marshallese women residing in Northwest Arkansas at a designated Baby-Friendly Hospital.

Although the study results were not statistically significant, there is no evidence that the intervention was unsuccessful in increasing the likelihood of Marshallese mothers exclusively breastfeeding. The difference seen in the exclusive breastfeeding rates among participants not receiving the intervention and those that did receive the intervention, indicates the education may encourage those intending to exclusively breastfeed to continue to do so. An increase in the study population size would lead to better results regarding whether the intervention was statistically significant or not. Researchers also suggest that adequate counseling about breastfeeding during the antenatal period could significantly improve breastfeeding initiation and continued practice (Emmanuel, 2015). The two part intervention could potentially be better accepted if the mothers received the education before delivering the baby. The intervention provided targeted education that Marshallese women lack otherwise due to the small population within the United States and a significant language barrier. With appropriate changes to the methodology, the intervention should be pursued further with hopes of increasing exclusive breastfeeding rates among Marshallese women.

### *Limitations*

The small sample size can be contributed to several factors. One of these factors is simply the number of Marshallese women giving birth during the implementation months. In the 5 months that the pre-intervention data collection occurred, 53 Marshallese women gave birth, with 14 of them ineligible and in the 7 months that the education was implemented, 88

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Marshallese women gave birth with 28 of them ineligible. In the control group this averages to 7.8 Marshallese eligible births a month and in the treatment group it averages to 8.57. This small number of deliveries is a limitation that can't be controlled or adjusted in this hospital except by increasing the documentation and implementation periods. In future studies this means that the time period needs to be extended or the research needs to be implemented at a hospital with higher birth rates of Marshallese women.

Nursing staff compliance in implementing the cultural education and/or documenting the education was a limitation. This barrier led to small sample numbers and inability to determine statistical significance. Despite routine contact with the staff, it was documented that only 41.67% were given the educational intervention during the assigned time period. This can be attributed to time constraints, poor documentation and a lack in staff education. The most beneficial learning is done when the mothers are willing, therefore during high stress parts of labor, immediately postpartum or when family is visiting, the video should not be played. This limits the time during the hospital stay when it is appropriate to intervene, which often doesn't match up with when a nurse/lactation consultant has time to set up the dvd player. Although there is often downtime in the maternity unit, high patient volume and increased acuity levels lead to an increase in workload and the educational material is less of a priority for the staff. The dvd player and brochures were kept at the nursing station to act as a visual reminder to promote compliance. In future studies it would be beneficial to provide other prompts such as signs in the break rooms and bathrooms.

When accessing the charts, it was often hard to find the forms where the intervention was documented. In some patients, the intervention was documented under a separate "teaching"



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form, while in others it was located in a teaching section under the “feeding” form. In a nursing staff meeting, they were asked to document explicitly whether the video was shown and brochure given under the separate teaching form. It's important to note that others may have not received them because not all of the staff was in attendance at this meeting, especially the night and part time employees. When discussing implementation with several lactation consultants, several patients were reported as being shown the video despite lack of documentation when accessing the charts.

The hospital assessed intent to breastfeed on admission by asking patients to fill out a form with check boxes including “breast milk”, “formula” or “I have chosen not to exclusively breastfeed”. These answer choices appear to confuse many of the patients because they checked multiple boxes. If they checked both “breast milk” and “formula” or “I have chosen not to exclusively breastfeed” by itself, they were recorded as not exclusively breastfeeding. Perhaps the language barrier or lack of instruction when given the form contributed to the lack of clarity when filling it out. On discharge, patients were asked verbally about their feeding plans and the nurses recorded their answers as “breast”, “bottle” or “both” in the handwritten newborn chart kept at the nursing station. A more accurate way of documenting would have been to assess intent to breastfeed the same way on admission and discharge, to avoid miscommunication and guarantee every patient was being asked the same way. Clarification of the definition of “breast milk” vs. “I have chosen not to exclusively breastfeed” should be included in further studies, since this could vary based on culture.

Another discrepancy in documentation was that feeding times and methods were not charted in one place, if at all, therefore it was impossible to analyze whether feeding methods

changed after receiving the supplemental education. Nurses recorded visits, assessments and education with the mothers and if they happened to be breastfeeding at the time it was recorded, but feedings were not consistently and accurately recorded throughout the day. Since it was unclear whether they exclusively breastfed during the hospital stay or after the implementation, only their verbal intent to exclusively breastfeed on discharge could be used to assess whether the implementation impacted their decision.

One last unexpected limitation was the number of adoptions that happened during the study period. Out of the 141 Marshallese mother-baby dyads, 42 of them were placed for adoption. This means that 29.79% of the potential study population was ineligible to collect data on because their newborns would not be discharged with them. This limitation can be reduced with increasing the study population by extending the time of both pre- and post- implementation periods. Adoption rates among Marshallese in the United States are high and have increased at the study hospital. In the county where the study site is located, it is estimated that 90% of adoptions involve Marshallese infants (Joyce, 2015).

### **Conclusion**

These findings suggest that a culturally conscious educational intervention given to Marshallese mothers during hospitalization is not enough on its own to influence the decision regarding exclusive breastfeeding at discharge. However, the hospital requested the intervention because of the targeted supplemental education it provided for its patients. This project highlighted the need for culturally competent education for Marshallese patients in Northwest Arkansas and hopefully encouraged the hospital and its employees to continue targeted education for this population. Other research can be done using this intervention as a guide to further

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impact Marshallese health disparities as the population continues to grow within the United States.

For future research, several limitations must be considered. Documentation must be improved including designating an appropriate location to record, recording times of feeding practices and interventions, and increased general compliance. Improved documentation will allow for a more accurate assessment of the impact of the education of exclusive breastfeeding rates. Future studies should consider lengthening the study period to increase the study population to a number more appropriate to assess statistical significance. Extending the study beyond the hospital length of stay to collect data that could more accurately describe breastfeeding practices outside of the hospital. Ideally, support and education should start with prenatal care and continue after the hospital stay to better guarantee long term exclusive breastfeeding. This study indicates that there is a potential in increasing breastfeeding rates among Marshallese women in the United States, but further research must be done to meet the educational needs of this population.

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