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

A thesis submitted in partial fulfillment of the requirements
of the degree of Baccalaureate of Science in Nursing

by

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Exclusive Breastfeeding Rates

Abstract

Background: The Marshallese are one of the fastest growing migrant populations in the U.S. They have considerable health disparities despite their increasing access to health care. The Marshallese women in this population prefer to breastfeed, but have encountered many cultural barriers that have deterred them from exclusively breastfeeding for a significant amount of time. Breastfeeding is linked to many protective benefits for children's health, such as decreasing the likelihood of obesity, even into the adult years.

Objective: The purpose was to evaluate the impact on breastfeeding rates through implementation of a culturally significant educational intervention for the Marshallese women at a study hospital pursuing Baby-Friendly status.

Methods: In this quasi-experimental study, the exclusive breastfeeding rates of the Marshallese women in Northwest Arkansas at the study hospital were collected prior to and after the interventions were implemented. The data gathered was compared to evaluate the effectiveness of the interventions. The intervention consisted of two parts: 1) a culturally significant educational video, and 2) a written pamphlet that the mothers were able to take home to reinforce the teaching.

Results: Although the results were not statistically significant due to sample size, exposure to the intervention positively influenced breastfeeding practices during the hospital stay.

Conclusion: It is hoped that this project will support the hospital in pursuit of Baby-Friendly status while also improving the exclusive breastfeeding rates and thus overall health of the Marshallese population in Northwest Arkansas.

Background and Significance

Since the Compacts of Free Association (COFA) between the Republic of the Marshall Islands and the United States was implemented in 1986, Marshall Islands citizens have been able to freely enter, lawfully reside, and work in the US, while the US is allowed exclusive military control of the region. This agreement has contributed to recent dramatic growth in migration from the Republic of the Marshall Islands (RMI) to the United States and its territories. The RMI is an archipelago that covers the largest area of ocean in the region of Micronesia. As part of the United Nations Trust Territory of the Pacific Islands from 1947-1986, it became the principle site of the US nuclear testing program in the Pacific Islands, and between 1946 and 1958, the US military tested nuclear weapons on several of the islands. These tests were equivalent to 7200 Hiroshima-sized bombs. Marshallese persons living on nearby atolls were not relocated and were exposed to significant levels of radiation. They subsequently consumed contaminated water, plants, seafood, and reef resources. The nuclear testing caused ongoing ecological and health effects. These atolls remain contaminated and the traditional lifestyle and diet of Marshall Islanders have been altered (McElfish, Hallgren, & Yamada, 2015). Once a lively country whose marine foraging sustained their daily life, RMI is now changed by the American colonialism. This has led to a change in diet and physical activity, bringing about rapid health transitions and increasing the prevalence of diabetes, obesity, cardiovascular disease, and cancer of various kinds. The Marshallese also suffer from malnutrition and dietary problems, as well as various forms of radiation related illnesses such as cancers and thyroid problems from nuclear bomb testing. High rates of poverty, inflation, poor public service infrastructure and resources in the RMI have led to migration in the U.S., seeking better education, economic opportunity, and medical treatment. According to the US Census Bureau, the Marshallese population in the

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United States tripled between 2000 and 2010. The US Department of Health records, school enrollment records, and the Marshallese Consulate indicate that approximately 40,000 Marshallese people live in the United States (U.S.), and it is likely that Marshallese migration to the US will increase in the coming decades. When the COFA was signed, COFA migrants were eligible for Medicaid and other safety net programs, but as a consequence of the Personal Responsibility and Work Opportunity Reconciliation Act, these migrants were excluded. Currently, COFA migrants have limited access to health care benefits in the U.S., which perpetuates health inequalities. Marshallese migrant children residing in Arkansas remain ineligible for CHIP coverage, and the parents are ineligible for the Medicaid expansion. For the Marshallese people, the cornerstone of a strong friendship between the nations is the provision of affordable, accessible, health care for Marshallese persons living in the U.S. (McElfish, Hallgren, & Yamada, 2015).

According to Preidt (January 28, 2016), if nearly all women worldwide breastfed their infants and young children, there would be about 800,000 fewer children's deaths and 20,000 fewer breast cancer deaths a year. Current breastfeeding practices also cost the world's economy hundreds of billions of dollars a year. There is a widespread misconception that breast milk can be replaced with artificial products without detrimental consequences (Preidt, 2016). New studies have confirmed that exclusive breastfeeding for the first 6 months and longer have been associated with decreased rates of childhood obesity and can reduce the odds of becoming overweight later in life. Furthermore, by discontinuing exclusive breastfeeding and switching to formula before 6 months of age the risk of obesity, diabetes, respiratory infections, and sudden infant death syndrome increases (Scott, Narcisse, & Lindholm, 2015). The promotion of breastfeeding is a focus of U.S. federal public health policy and a Healthy People priority.

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Currently, 79.2% of women in the United States initiate breastfeeding; however, one-quarter (19.8%) have already introduced infant formula or artificial breastmilk substitute before leaving the hospital. Healthy People 2020 objectives for breastfeeding in early postpartum period, at 6 months and 12 months are 81.9%, 60.6% and 34.1%, respectively. Healthy People 2020 objectives for exclusive breastfeeding through 3 and 6 months of age are 46.2% and 25.5%, respectively (CDC, 2015). More importantly, these crude rates do not account for substantial underlying racial and socioeconomic disparities. Rates of breastfeeding initiation among low-income women who participate in the U.S. Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) lag behind non-WIC eligible mothers by approximately 24%. In addition, WIC participation is positively related to the use of artificial breastmilk substitute. Exclusive breastfeeding during the newborn hospital stay is a public health goal and is associated with prolonged duration of breastfeeding (Kellams *et al*, 2016). The effect of exclusive breastfeeding in the hospital on duration is so great that the Joint Commission has added the rate of in-hospital exclusive breastfeeding as a Perinatal Core Measure (Feldman-Winter, Douglass-Bright, Bartick, & Matranga, 2013). Still, the 2013 CDC Maternity Practices in Infant Nutrition and Care (mPINC) survey for Arkansas shows that on average, only 23% of facilities in Arkansas adhere to standard clinical practice guidelines against routine supplementation the use of artificial breastmilk substitute for medical reasons only.

The rates of breastfeeding in the U.S. remain low, particularly within low income and some ethnic populations. Although the breastfeeding initiation rate in Hawaii (89.6%) is higher than the national average (70.0%), the Native Hawaiian and Pacific Islander populations remain lower (46.5%). The Marshallese depend on migrant networks of extended family, co-ethnic friends, and fellow church members to provide advice and involve themselves in the decision

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making process of the individual for health care. Shortcomings in linguistic and cultural competence in a new environment lead them to depend on these networks even more (Choy, 2008). The Marshallese migrants who come to the U.S. may have extended family support, but it is fragmented. They may not have the family history of breastfeeding in the U.S. to support their decisions regarding infant feeding. Scott, McElfish, and Shreve (2015) state that mothers and grandmothers are the most influential in influencing the pregnant mother's decision on whether or not to breastfeed the infant. Furthermore, most of these women receive breastfeeding support and information from the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), which provides free formula to the mothers. This may work as a disincentive because many mothers become familiar with the use of formula and bottle-feeding and the promotion of exclusive breastfeeding becomes incompatible. These women are also more likely to live in stressful circumstances. Their homes may be chaotic with extended family moving in and out, they work in low-income jobs, have multiple children to care for, and live in non-supportive environments that aren't conducive to breastfeeding. Formula feeding becomes a convenience to them (Flood & Dodgson, 2010). Northwest Arkansas has the largest enclave of Marshall Islanders in the continental United States. Many came with the promise of a steady income of working in chicken plants. There is little published information available regarding the health care status of these migrants in our area. Literature on Marshallese migration to Hawaii suggests that living in the U.S. results in less support and further distance from their cultural roots. Scott, McElfish, and Shreve (2015, February) discovered that the lack of acceptance of breastfeeding in public in the U.S. deters the Marshallese mothers from breastfeeding, while public breastfeeding is not discouraged in their cultural background. The language barrier compromises the abilities of women with low language skills to understand the information

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given to them by health care professionals, but also limits their ability to express their questions, concerns and symptoms. It is also clear that these women need physicians and nurses to understand their beliefs, customs, and cultural practices (Santiago & Figueiredo, 2013). In a study conducted in Hawaii by Anderson, Hayes, and Chock (2014) to determine the characteristics of early childhood overweight and obesity and the impact of breastfeeding, they found significant differences in child BMI between race/ancestry groups with Samoan, Micronesian, “Other Pacific Islander” and “Multiple Other Pacific Islander” children having higher percentages of overweight and obesity compared to Asian, White, and “Other” Children. Children who were breastfed for 6 months or longer compared to those who were never breastfed, had a significantly decreased likelihood of childhood overweight and obesity at age two. Overweight and obese children are at an increased risk for numerous health conditions, including type 2 diabetes, asthma, and musculoskeletal problems. Since there are so many Marshallese residing in northwest Arkansas, it is imperative to take action towards increasing breastfeeding rates in this population in order to reduce adverse health effects for the future.

According to the CDC Report Card (2014), Arkansas has one of the lowest exclusive breastfeeding rates at 6 months (10.3), and also reports 0% of live births occurring at Baby-Friendly Facilities. The Baby-Friendly Hospital Initiative describes Ten Steps to Successful Breastfeeding that have been shown to increase breastfeeding rates by providing support to mothers. Since breastfeeding rates are higher in Baby-Friendly hospitals, it is important to help hospitals improve their maternity care (CDC, 2011). Results from a randomized trial conducted in Singapore that investigated the use of a 16-minute breastfeeding video delivered in the clinical setting during the prenatal period, along with counseling by a lactation consultant for 15 minutes and written materials, showed improved rates of exclusive breastfeeding at 6 weeks through 6

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months postpartum (Su, Chong, & Chan *et al*, 2007). Potential barriers to providing education in a clinical setting include lack of adequate provider training, time constraints, lack of reimbursement, and a wide array of other topics that must be addressed at each visit. However, the use of educational videos, a potentially cost-effective strategy, is emerging as an effective mode of patient education (Kellams *et al*, 2016). The study investigated how encouraging breastfeeding through an educational intervention in a hospital pursuing Baby-Friendly status would impact the rate of exclusive breastfeeding, and subsequently, the improvement of overall health status of the population of Marshall Islanders in this NW Arkansas area.

The purposes of this study are to 1) develop and implement a culturally sensitive exclusive breastfeeding educational program and, 2) to examine exclusive breastfeeding rates among mothers in the Marshallese population in a Northwest Arkansas hospital following the implementation of an educational program.

Methods

Overview

This study was conducted following approval from the University of Arkansas Institutional Review Board and the study hospital's Quality Improvement Department. At the time of this study, the hospital did not have Baby-Friendly certification, but did have lactation consultants available.

Design

The design of this quasi-experimental study is a retrospective data analysis examining the effects of a quality improvement project on exclusive breastfeeding rates of Marshallese mothers in a study hospital pursuing Baby-Friendly status. The intervention was implemented to promote breastfeeding practices. A medical record review to assess feeding practices before and after the

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intervention was conducted. Post-intervention data of exclusive breast feeding rates of Marshallese mothers after the completion of the educational intervention was evaluated and compared to data collected prior to the intervention. The intervention consists of two different components. The first component was a culturally significant educational video (around 8 minutes in length), involving a Caucasian breastfeeding mother and a Marshallese mother who has successfully exclusively breastfed. The purpose of including a Caucasian mother was to show her breastfeeding in public in order to nullify the stigma that Marshallese mothers cannot publicly breastfeed. Mothers were informed of the importance and benefits of exclusive breastfeeding, and the process of successful breastfeeding. The video was done in the Marshallese language to ensure a more culturally sensitive and impactful intervention. The second component consisted of a written document thoroughly explaining the information presented in the video. It was convenient for the mothers to take home to reinforce the learning. The written educational product was provided in Marshallese and was translated and back-translated by a certified Marshallese translator. This educational brochure existed in English and was prepared by the AR Foundation for Medical Care (AFMC).

Study Population

Pregnant Marshallese mothers at the Northwest Arkansas hospital, ages 18-45, meeting the post-education designation were included in the study. Marshallese mothers who did not participate in the education or had a baby delivered prior to 37 weeks gestation or treated for hyperbilirubinemia were excluded from this study.

Study Procedures

All patient information was de-identified in accordance with the Health Insurance Portability and Accountability Act (HIPAA) guidelines. All medical record reviews were

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conducted in the hospital setting in a hospital in Northwest Arkansas. Medical record chart reviews post-intervention were conducted in the spring of 2016. Demographic data collected included the age of the mother, parity, method of delivery (C-section or vaginal), insurance status, gestational age, birth weight, discharge weight, intent to breastfeed, and length of hospital stay. The outcome measured is a comparison of the exclusive breastfeeding rate at discharge. Breastfeeding rates were collected pre-educational intervention and post-educational intervention and then compared.

Timeline

The needs assessment data collection began on September 14, 2015. Implementation of the quality improvement project began on January 11, 2016. Post-intervention data collection began on March 7, 2016 and was completed on March 28, 2016.

Statistical Analysis

Eighteen medical charts were reviewed of the mothers who received the intervention, and of those, 15 women met the eligibility criteria. Since the post-intervention data sample (the treatment group) included only 15 charts, it was necessary to change the way the data was initially going to be analyzed. The control sample for the analysis was selected from the 100 charts included in the needs assessment study. In order to make the data analysis as relevant as possible, it was determined that the two most significant variables should be matched between the control and treatment group. Due to age having the largest variation of all the variables, age was selected to match mothers more closely. Parity also seemed most relevant because it described the number of babies the moms actually fed. The mother's age and parity from the treatment group was matched to include 15 charts from the needs assessment study. If there was more than one mother with the same age, then the mother was randomly selected from all

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eligible mothers (using excel to generate a random number) and that mother's parity and outcome data was used. If there were multiple mothers with both the same age and the same parity values, and if there was variation on the outcome, once again, the mother to be added to the control group was randomly selected.

To measure the outcome, the valence of the direction of change from pre-intervention to post-intervention was used. Determination of the valence can be seen in Figure 1 below. Any change that moved or stayed in a positive direction (defined as breastfeeding only), was labeled as a positive change. Any change that moved or stayed in a negative direction (defined as moving away or remaining away from breastfeeding only), was labeled negative. So, for instance, if a mother indicated that she planned to breastfeed but actually breastfed and used formula, this was considered a negative outcome. On the other hand, if a mother initially indicated that she planned to use formula but actually breastfed instead, this was considered a

		pre-study planned behavior		
		breastfeeding	formula	both
post-study observed behavior	breastfeeding	positive	positive	positive
	formula	negative	negative	negative
	both	negative	positive	negative

Figure 1 Determination of or designation of the outcome was based on the intersection of the pre-study planned behavior and post-study observed behavior.

positive outcome.

Descriptive Statistics

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General characteristics of the mothers in the treatment and control group and their pregnancies are provided in Table 1. The groups are statistically identical in average age and in average number of previous pregnancies.

Table 1 Descriptive Statistics by Group - Mother's Age and Parity

Variable	Group	N	Mean	SD	Min	Max
Age	Treatment	15	25.3	4.48	19	37
	Control	15	25.3	4.48	19	37
Parity	Treatment	15	2.27	1.53	0	5
	Control	15	2.33	1.54	0	5

Results

Mothers from each group began with specific intentions regarding breastfeeding, but were often observed to practice different behavior from those originally stated intentions. Table 2 provides a summary of where these changes took place for each of the two groups.

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Table 2 Frequencies of mother's initial intentions and actual behavior

Variable	Group	Breastfeeding	Formula	Both
		N (%)	N (%)	N (%)
Intentions	Treatment	7 (46.7)	2 (13.3)	6 (40.0)
	Control	1 (6.7)	3 (20.0)	11 (73.3)
Behavior	Treatment	7 (46.7)	1 (6.7)	7 (46.7)
	Control	4 (26.7)	4 (26.7)	7 (46.7)

Given that the level of measurement of the outcome data was nominal, a Chi-Square Test of Independence was conducted to determine if the change between the two groups (as defined using Fig. 1) was significantly different. A significance level of 0.05 was used.

While there were large differences in the types of changes between the two groups, they were not large enough to reach statistical significance, $\chi^2 = 2.14$, $p = 0.2723$. Note, the *p-value* was corrected using *Fisher's Exact Test* because not all cells had the minimum requirement of 5 or more. Table 3 provides the frequencies of the changes by treatment group.

Table 3 Frequency of change: Intentions to behavior

Group	change	
	negative	positive
	N (%)	N (%)
Treatment	6 (40.0)	9 (60.0)
Control	10 (66.7)	5 (33.3)

The differences are quite large and indeed the majority of changes are in completely opposite directions. Two-thirds of the control group mothers moved in the negative direction

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from pre to post study. The exact opposite was true for the treatment group, where sixty-percent of the mothers who received an intervention before leaving the hospital actually moved in a positive direction. The phi-coefficient is a measure of the degree of association between two binary variables. It is interpreted on a -1 to +1 scale, with -1 to -0.7 being a strong negative association, and a +0.7 to +1.0 being a strong positive association. Given the sample size, however, even such large differences, which yield a .27 phi-coefficient (moderate association), are not statistically significant. However, the fact that the phi-coefficient is moving in the positive direction shows that there is a weak positive association between the intervention and breastfeeding rates.

Discussion

In the U.S., breastfeeding initiation rates and exclusivity in the hospital continue to fall short of national goals, especially among certain populations. Low-income women are less likely to breastfeed and are therefore an important high-risk group to target for interventions (Kellams *et al.*, 2016). This retrospective data analysis aimed to examine the effects of a low-cost, culturally significant educational breastfeeding video and pamphlet on exclusive breastfeeding rates of Marshallese mothers in a study hospital pursuing Baby-Friendly status. Both components to the intervention were easy to implement for staff. Although the post-intervention data sample was too small to be considered statistically significant, it cannot be assumed that the intervention was not meaningful or should not be pursued further.

These findings are similar to those of a randomized controlled trial conducted at the University of Virginia (UVA) Health System and the Virginia Commonwealth University (VCU) Health System, where the overall rate for breastfeeding initiation was 79.8% in 2010. At the time of this study, neither hospital had Baby-Friendly certification, but both had lactation consultants

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who saw women on an as-needed basis. They wanted to determine if a low-cost prenatal education video shown to mothers during a prenatal care visit occurring in the third trimester would improve hospital rates of breastfeeding initiation and exclusivity. In their sample of 522 low-income women, they discovered that exposure to the intervention did not affect breastfeeding initiation rates or duration during hospital stay (Kellams *et al.*, 2016). These findings were comparable to another randomized clinical trial of a similar video conducted in Singapore, which found that rates of breastfeeding did not differ significantly at hospital discharge and at 2 weeks, though rates of exclusivity were higher for the intervention group at 6 weeks and at 6 months postpartum (Su, *et al.*, 2007). The researchers suggested that more intensive, individually targeted antenatal education may be more effective at improving breastfeeding exclusivity and duration. Reasons for lack of impact of the video may relate to the timing and/or mode of the intervention and/or to the lack of other support mechanisms for participants (Kellams *et al.*, 2016). Since these were findings from two studies that showed the video in the third trimester of pregnancy (in an attempt to reach women close to the time of delivery), it can be inferred that this project's timeline of intervention and reaching mothers during their hospital stay for birth may be too late to impact a mother's decision to initiate breastfeeding. It has been shown that the decision occurs early in pregnancy, or perhaps pre-conception (Gurka *et al.*, 2014). Thus, Marshallese mothers who watched the video or received the pamphlet during their hospital stay for birth may be less influenced by an educational intervention than women targeted earlier. However, it was observed that the majority of these mothers do not seek prenatal care until late in their pregnancy, or they do not receive prenatal care at all. Therefore, interventions should also be aimed at improving the rates of prenatal care in this population (in community clinics, etc.) so that breastfeeding education can be

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implemented earlier. Also, combinations of different educational approaches might be more effective, such as prenatal breastfeeding classes, personal counseling, and/or peer counseling along with the video (Kellams *et al.*, 2016). The videos for the Kellams study were around 25 minutes in length, which they noted as a barrier to the participant's full attention and ease of implementation among the staff. However, the video for the Marshallese mother's intervention was only 8 minutes in length, and mothers reported that they did not have an issue with attention span or the timing. The nurses also noted that it was not an inconvenience for them to leave the video with the mothers for the 8 minutes. So, it cannot be assumed that the length of the video was a barrier to effective education. Finally, support for women to initiate breastfeeding and exclusively breastfeed in the hospital is a critical element for success. In the Marshallese population that values social/cultural support, this timing of this type of hospital education might be more effective if Marshallese peer supporters were available to them during and after their stay to reinforce teaching.

Limitations

There are multiple reasons why the sample size was small. The sample population was limited to mothers who gave birth in the study hospital between January 11, 2016 and March 28, 2016, which limits generalizability of the study findings. In addition to the short amount of time that mother's charts were included in the sample data collection, there was a discrepancy about use of the intervention between the different shifts of nurses. In order to get the information about the project out to the nurses, researchers met with the lactation consultant at the hospital and encouraged her to educate the nurses about the importance of the intervention. The nurses were educated on the project by the lactation consultant during a staff meeting, and also via student researcher visits to the unit during report from day to night shift. The DVD players,

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DVDs, and pamphlets were placed in the nursery and signs were posted around the nurse's station as reminders to utilize the interventions if they had a Marshallese mother who met the criteria. With various schedules and shifts on this unit, many of the nurses were still unaware that the intervention was available for use (mostly weekend and night shift nurses since they were not around the student researchers as often). This limited the mothers that could have been included in the sample size since they were not offered the education. Furthermore, there was a lack of documentation by the nurses when they showed the video to mothers. The intervention was supposed to be documented on a sheet in the nursery with the mother's sticker and baby's sticker, and an indication of whether the mother saw the video, received the pamphlet, or both. There were many instances when the nurses used the interventions but failed to document it on the chart, which significantly limited the sample size. It is not known whether the intervention video would have affected those who did not participate any differently.

As was stated before, the post-data collection participant numbers were small. Mathematically, the numbers were not large enough to be statistically significant, therefore, a Fisher's Exact Test was run on the sample. It demonstrated that with a positive phi-coefficient, this study is moving in the right direction. Since this was a pilot study in a population with little to no research, especially regarding breastfeeding, this research makes a great contribution to the field of study. It shows that a study like this takes time, and the results should serve as a reference point for future studies. The limitations on the study should be considered to include in future studies on this population as it is expanded in the community. To combat this, the study researchers personally met and encouraged the nurses, even coming by at shift change, but again, most of this occurred on the weekdays. Researchers posted notifications around the nurse's

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stations and in the lounge to remind the nurses, but ~~even~~ those seemed to make minimal difference.

Another limitation was that there was no documentation of when the mothers received the intervention. Researchers looked at the intent to feed from the form that was filled out by the mothers' pre-hospitalization and compared what they indicated before to what they actually did in the hospital as noted on the Newborn ADLs in the chart. Some of the charts had trends in the feeding that could suggest when they received the intervention, but the time was not directly charted. For example, a mother could indicate that she wanted to formula and breastfeed (sometimes noted as bottle and breast) on the pre-hospitalization form, and while in the hospital after birth charting documented the following: breast, bottle, bottle, breast, and then for the last ten feedings, breast. Because the timing of the feeding was not recorded, it is unknown when the mother received the intervention, so it had to be charted that she formula fed and breastfed while in the hospital, which would indicate that the intervention did not change her decision. However, if she indeed saw the video sometime after one of the last formula feedings and that influenced her decision to solely breastfeed, the intervention would have positively influenced her decision to breastfeed. There were many charts with trends like this, and most of them had to be charted as "both" when they could actually be "breastfeeding only".

Another potential limitation encountered was specifically cultural in nature. According to the nurses who serve this population in labor and delivery in the study hospital, the Marshallese culture in Northwest Arkansas has a different definition of breastfeeding when they note it on the intake form. If they say they are going to breastfeed, it usually means that they will breast and formula feed. There is not a way to specify to them on their initial form that "breastfeeding" means no formula. Therefore, when many moms choose "breastfeeding" initially, and then use

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breast and bottle in the hospital, they are not actually rejecting their decision to breastfeed, it is a cultural definition. Another cultural barrier we encountered that limited the study was the timeline. The Marshallese population does not consider time in the way Americans do. It is difficult for them to keep appointments or make plans for the future, which was challenging for the researchers when trying to work with them to get the interventional video completed. Due to time constraints, the video was not implemented in the hospital until January. During this time, the study researchers were on winter break and were not at the hospital initially to provide a lot of necessary education to the nurses. This caused the data collection to be postponed until mothers started seeing the video and receiving the pamphlet. If the interventions could have been implemented earlier, and if the nurses would have known more about the project, there may have been more mothers included in the treatment population, which could have made the data more statistically significant.

While visiting the hospital, one researcher was able to personally show the video to some mothers and speak with the nurses about what mothers said to them about the video. For example, one young mother had just given birth to her fourth child in five years. After showing her the video to get her feedback, she said: “I really liked the video. I didn’t know breastfeeding wasn’t supposed to hurt. That’s why I stopped so early with my other kids. I want to see that nurse that helps with breastfeeding”. Because of the video, she learned that she should ask the lactation consultant for help with her latch so that she could breastfeed without it hurting. The lactation consultant had offered her assistance before, but she didn’t think that the pain was something she could help with. Another mother told a nurse, “I learned about water in the milk, I thought my baby needed water and formula, but now she just needs the breast”. An older mother of four who had exclusively breastfed all of her children told her nurse, “the video was great, but

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I didn't learn anything new". When a lot of these mothers watched the video, they learned why they should *just* breastfeed, and that breast and bottle are not as good for the baby as just breast.

Conclusion

These findings suggest that a culturally sensitive breastfeeding intervention viewed in the hospital by Marshallese mothers who have just delivered may not alone influence the initiation and exclusivity of breastfeeding during the hospital stay. Regardless, the intervention was impactful, and other studies can use the video as an example and create even more professional versions of it in the future. Since exclusive breastfeeding rates cannot truly be determined by observing what is completed in the hospital prior to discharge, further studies would do well to follow up on the mothers' post-discharge (out in the community) to assess if the intervention fulfilled the purpose: to examine exclusive breastfeeding rates among mothers in the Marshallese population in a Northwest Arkansas hospital following the implementation of an educational program. This project also encouraged the hospital to provide other sources of culturally sensitive educational material for the Marshallese population in the hopes that discharge teaching, information on chronic illness management, and more can be readily available in their language.

For future research, several things should be considered. Viewing the video during the first 8 hours after birth might have a higher impact on feeding choice. Further studies documenting the timing of the educational intervention are needed. Improved methods of documentation are needed to accurately assess the impact of the education on exclusive breastfeeding. Ideally, a longitudinal study should be done to assess breastfeeding rates at four and six months. Based on previous research, the Marshallese breastfeeding mother may benefit from culturally appropriate peer counselors through WIC. Increasing breastfeeding rates in this

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at-risk population likely requires a multifaceted approach begun early in pregnancy or prior to conception. In order to improve health disparities in the Marshallese, such as obesity and diabetes, promotion and improvement of exclusive breastfeeding is needed. This study indicates the potential for improvement, but further studies are imperative to meet the needs of Marshallese breastfeeding mother-infant dyads.

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