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Breast-feeding perceptions, beliefs and experiences of Marshallese migrants: an exploratory study

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Abstract
Objective: To determine perceptions, beliefs and experiences affecting breast-feeding in Marshallese mothers residing in Northwest Arkansas, USA.
Design: A qualitative, exploratory study using a brief survey and focus groups. Marshallese women, 18 years or older who had a child under 7 years of age, were included in the study.
Setting: Community-based organization in Northwest Arkansas.
Results: The majority of mothers viewed breast milk as superior to formula, but had concerns about adequate milk supply and the nutritional value of their milk. The primary barriers to exclusive breast-feeding in the USA included public shaming (both verbal and non-verbal), perceived milk production and quality, and maternal employment. These barriers are not reported in the Marshall Islands and are encountered only after moving to the USA. Breast-feeding mothers rely heavily on familial support, especially the eldest female, who may not reside in the USA. The influence of institutions, including the Special Supplemental Nutrition Program for Women, Infants, and Children, is strong and may negatively affect breast-feeding.
Conclusions: Despite the belief that breast milk is the healthiest option, breast-feeding among Marshallese mothers is challenged by numerous barriers they encounter as they assimilate to US cultural norms. The barriers and challenges, along with the strong desire to assimilate to US culture, impact Marshallese mothers' perceptions, beliefs and experiences with breast-feeding.

Keywords
Breast-feeding
Obesity
Community-based participatory research
Pacific Islanders
Minority health
Immigrants
Marshallese
Infant feeding
Migrants
Health disparities
Paediatric

The American Academy of Pediatrics, the WHO and the US Department of Health and Human Services recognize breast-feeding as the best source of nutrition for infants[1]. 'Globally, exclusive and continued breastfeeding could help prevent 13 % of deaths of children under five years old'[2]. The introduction of solid foods prior to 4 months is associated with obesity later in life, while breast-feeding for at least 9 months can reduce the odds of becoming overweight by more than 30 %, as breast milk's protective effect increases with duration[3,4]. The early introduction of formula and discontinuation of breast-feeding also increases the risk of obesity, diabetes, sudden infant death syndrome and acute diseases such as respiratory infections[3]. Of the approximately 135 million babies born every year worldwide, only 39 % are exclusively breast-fed during the first 6 months; and more than 800 000 deaths each year in children under 5 years of age are also attributed to suboptimal breast-feeding[5]. In the USA, the rate of exclusive breast-feeding for the first 6 months is at 16·4 % and is rising slowly, but the rate remains well below the Healthy People 2020 target goal of 25·5 %[1]. According to the National Immunization Survey, 80 % of infants in the USA are breast-fed with only 21·9 % exclusively breast-feeding at 6 months[6]. At 18 months, only 9·9 % are breast-feeding. Among Native Hawaiian and other Pacific Islander infants in the USA, 83 % are ever breast-fed and 11·8 % are exclusively breast-feeding at 6 months[6]. In the Republic of the Marshall Islands, 53 % of children at age 2 years are breast-feeding[7]. While there is limited additional data on Marshallese infant feeding, one study shows that 98·5 % of infants received breast milk; and the average duration of breast-feeding was about 11 months[8]. The objective of the present study was to understand the perceptions, beliefs and experiences related to breast-feeding in Marshallese mothers residing in Northwest Arkansas, USA.

Ethnicity and acculturation

Previous research shows socio-economic disparities and racial/ethnic differences have a substantial effect on US

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breast-feeding initiation and duration rates. However, the role of immigrant status in understanding these disparities has not been well studied[9]. Recent research suggests that breast-feeding duration rates vary based on cultural differences and the level of acculturation of immigrant mothers. Kimbro *et al.* conducted a study of Mexican immigrant mothers in the USA and found that successive generations of Mexican immigrants are abandoning breast-feeding once they establish residency in the USA[10]. The immigrant population in the USA has grown considerably in the last three decades, accounting for 12 % of the total US population[9]. Due to this rapid increase in immigrant populations, there is a growing need to understand the effect of immigrant acculturation on breast-feeding. Furthermore, although there has been some research to explore the effects of acculturation on breast-feeding perceptions, beliefs and experiences of Mexican immigrant mothers, there has been little research on Pacific Islander populations' breast-feeding perceptions, beliefs and experiences, and no such research with Marshallese mothers.

Marshallese migrants are a Pacific Islander population from the Republic of the Marshall Islands. The US military tested nuclear weapons in the Marshall Islands from 1946 to 1958. The nuclear tests were equivalent to more than 7200 Hiroshima-sized bombs[11–14], which is why the Atomic Energy Commission has labelled the Marshall Islands one of the most radioactive and contaminated places in the world[11]. Between 1946 and 1986, the Marshall Islands were part of the Trust Territories of the Pacific Islands and controlled by the USA. In 1986, the Republic of the Marshall Islands became an independent nation and entered into the Compact of Free Association with the USA. The Compact of Free Association allows Marshallese to come to the USA without a visa or permanent resident card[15,16]. As a result, Marshallese migration to the USA is increasing and more than tripled between 2000 and 2010[17]. Currently, the north-west region of Arkansas has the largest population of Marshallese living in the continental USA with ~11 000 Marshallese community members living in Arkansas[18]. Marshallese face significant health disparities with significantly higher rates of obesity, diabetes, CVD and infectious diseases than the US population[19–25]. Marshallese living in Arkansas are often constrained by low-income employment and limited English proficiency, and experience significant barriers to health-care access[26–28].

Perceptions, beliefs and experiences that influence breast-feeding behaviour

It is widely accepted that breast-feeding initiation and duration rates are greatly affected by levels of social support and even perceived social support[29]. The public health discourse surrounding breast-feeding is that 'breast is best', natural and a crucial part of the mothering identity. However, the lack of informal and formal support for women in breast-feeding can create a disempowerment that may potentially thwart breast-feeding experiences[30]. Feminist scholars argue that the sexual objectification of the breast in US culture may have a substantial effect on breast-feeding initiation and duration rates[31,32]. A central theme in this scholarship is the paradox of breasts being viewed simultaneously as sexual objects and as a valued source of nutrition for infants.

Avery *et al.* identified a key dominant factor in new mothers' breast-feeding experience was their ability to have confidence in their capability to feed their infant[33]. However, a mother's breast-feeding confidence can be affected by a myriad of factors, such as the mother's expectations, social support networks, the discourse of breast-feeding experts and levels of comfort[34]. Additionally, Schluter *et al.* conducted a study of Pacific Islanders in New Zealand and found that a growing concern to breast-feeding duration is the uncertainty of breast milk supply[35]. Research indicates that perceived insufficient milk supply is commonly due to mothers' lack of education and understanding of effective techniques to increase milk supply[35]. Concurrently, Abdulraheem and Binns found that, among Maldivian mothers, the main reason given for mothers ceasing breast-feeding was the introduction of formula due to beliefs of low milk supply[36].

A mother's decision to breast-feed is largely determined by the mother's expectations, levels of support, the discourse of breast-feeding experts, perceptions of public breast-feeding and concerns about adequate milk supply. However, there has been little research to explore these factors among the Pacific Islander populations residing in the USA.

Theory

Pender's Health Promotion Model (HPM) served as the guiding theoretical framework for the qualitative inquiry of the present study. The HPM posits that individuals strive to control their behaviour in a manner that will lead to self-improvement[37]. The HPM consists of three major categories that influence behaviour: (i) individual characteristics and experiences; (ii) behavioural-specific cognitions and affect; and ultimately (iii) behavioural outcomes. The second category of behavioural-specific cognitions and affect identifies six constructs that influence behaviour: (i) benefits; (ii) barriers; (iii) self-efficacy; (iv) activity affect; (v) interpersonal; and (vi) institutional influences. The HPM can be used to understand the influences that affect a person's ability to achieve certain behaviours[37]. Health professionals also influence health-promoting behaviours by creating an environment that allows for encouragement and positive influences on an individual's behaviour.

The construct of benefits refers to the person's perceived benefit of engaging in the activity. Barriers are defined as

perceptions that may block or have a personal cost to undertake a health behaviour. Perceived self-efficacy is identified as the belief in the extent of the person's own ability to execute an action. Activity-related affect encompasses subjective feelings and cultural norms about the health behaviour. The construct of interpersonal behaviour refers to the influence that family, peers and providers have on the person's perceptions of a specific health behaviour. Institutional influences are defined by the organizational structures, rules and behaviour patterns that are important to the person's society[38].

Methods

The present study is part of a community-based participatory research (CBPR) partnership with the Marshallese community that began in 2012. The initial research idea came when a community co-investigator stated: 'Americans don't like breast-feeding'. The statement led to further discussion that resulted in the decision to conduct an exploratory pilot study. The study used qualitative focus groups to examine the research question: what are the perceptions, beliefs and experiences affecting exclusive breast-feeding in Marshallese mothers in the USA? The research team used focus group methodology, to document individual responses as well as rich discussion between participants[39–43].

Participants were recruited using community health workers in collaboration with Arkansas Coalition of Marshallese, Gaps in Services to Marshallese Task Force, Marshallese pastors and the local Republic of the Marshall Islands Consulate. Due to the exploratory nature of the study, a combination of convenience and snowball sampling was used. The inclusion criteria were women, who self-reported as Marshallese, were aged 18 years or older and had a child under 7 years of age. Community health workers gave potential participants who met the inclusion criteria information about the study and invited them to participate. They also asked those participants if they knew of any additional women who met the criteria and those women were invited to join the study. All participants were Marshallese mothers currently living in Arkansas. Participants provided verbal consent prior to data collection. After consent, participants completed a brief survey that included questions on demographic characteristics, breast-feeding history, delivery method and length of hospital stay, prenatal care and participation in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC; see Table 1)[44,45]. The study procedures were reviewed and approved by the University of Arkansas' Institutional Review Board. The research team included two researchers in Nursing and two researchers in Public Health and Public Policy. In addition, three community health workers served as community co-investigators.

Table 1 Mother and child demographics, prenatal care and WIC participation among Marshallese mothers (*n* 31) residing in Northwest Arkansas, USA, 2015 (modified from Hawley *et al.*[56])

Response category	*n*	% of sample*
Age of youngest child		
1–12 months	17	54·8
13–24 months	7	22·6
25–36 months	3	9·7
37+ months	4	12·9
Mother's language		
Marshallese	30	96·8
English	1	3·2
Number of years mother in USA		
1 year or less	4	12·9
1 to 3 years	0	0·0
3 years or more	27	87·1
Prenatal care		
Yes	28	90·3
No	3	9·7
Time of initial prenatal care visit		
1st trimester	17	68·0
2nd trimester	7	28·0
3rd trimester	1	4·0
WIC participation†		
Food for mother	11	36·7
Formula for baby	13	43·3
Food for baby	11	36·7

WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.
*Percentages are based on the number of responses for each item.
†*n* 30; participants checked all that applied.

From 21 January 2015 to 22 April 2015, a total of thirty-one participants were interviewed in five focus groups (FG1–FG5). In addition, four native Marshallese community health workers who work with Marshallese mothers participated in a sixth focus group (FG6). The health-care workers were not asked to complete the survey. Each focus group was facilitated by a researcher and two bilingual (Marshallese and English) community health workers, who provided translation as needed. The focus groups had between three and eight participants and lasted approximately an hour. A semi-structured interview guide with open-ended questions was used to facilitate the focus groups. Questions focused on perceptions related to infant feeding options; who and what influenced infant feeding decisions; and how breast-feeding experiences are similar and different in the Marshall Islands and the USA. The semi-structured interview guide encouraged participants to speak in depth about a topic and helped ensure that all focus groups considered consistent questions. All interviews were conducted in a private room at the local community centre. Participants were given a gift card valued at $US 15 for their participation.

Focus groups were recorded and transcribed verbatim. The research team coded transcripts for *a priori* thematic codes based on the constructs of the HPM as well as for emergent themes within those constructs. The research team discussed the thematic codes and organized them in a codebook table[46]. There were two primary coders and

two confirmation coders. After the initial results were summarized, Marshallese community health workers provided feedback on the interpretations of the thematic codes. This allowed the researchers to ensure the cultural nuances of meaning from participants' responses were interpreted correctly. The Marshallese community health workers' insights also helped shape the discussion and recommendations for policy and practice. The research team discussed and compared thematic codes through the writing process to ensure intercoder agreement, thus strengthening the reliability and validity of the results[47]. The thematic codes, utilizing the HPM, are presented in Table 2 (modified from Taymoori *et al.*[48]).

Results

Of the thirty-one participating mothers (exclusive of the health-care workers who were not asked to complete the survey), the mean age was 32·1 years and mean age of the youngest child was 21·7 months. Thirty participants reported they had breast-fed their last child, with one not responding. Eighteen were currently breast-feeding, twelve had discontinued breast-feeding and one did not respond. The average duration of breast-feeding, among those who had discontinued, was 4·1 months. The preferred language of the vast majority of the mothers was Marshallese, and all but four of the mothers surveyed had lived in the USA for 3 years or more. All but three participants received prenatal care, with 68 % receiving care at or before 3 months' gestation, 55 % staying in the hospital for 2 d or less, and 45 % staying in the hospital for 3 d or more. All except for four mothers reported participating in WIC and most reported receiving formula from the WIC programme.

Table 2 Dominant breast-feeding perceptions, beliefs and behaviours among Marshallese mothers (*n* 31) residing in Northwest Arkansas, USA, 2015 (modified from Taymoori *et al.*[48])

Perceived benefits	1. Babies' health
	2. Quality of breast milk
Perceived barriers	1. Public shaming: verbal
	2. Public shaming: non-verbal
	3. Work
Perceived self-efficacy	1. Inadequate milk supply
	2. Maternal diet
Activity-related affect	1. Child-led breast-feeding
	2. Age to breast-feed
Interpersonal and prior related behaviour	1. Familial support in the Marshallese culture
Institutional influences	1. Medical staff
	2. WIC programme influence

WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.

The results were coded for six *a priori* themes that reveal the dominant discursive positions surrounding breast-feeding perceptions, beliefs and experiences among Marshallese mothers. These themes have been organized using the HPM constructs of: (i) benefits; (ii) barriers; (iii) self-efficacy; (iv) activity-related affect; (v) interpersonal; and (vi) institutional influences. Sub-themes within the constructs of the HPM did emerge and are outlined in Table 2[48]. The Marshallese culture is a collectivist culture and participants often use 'we' and 'they' language when answering questions about themselves. This trend has been documented in our prior research[26,49] and in the research of others[12].

Benefits

The majority consensus among participants was that breast is best and is the healthiest option for infant feeding. Within the *a priori* theme of benefits, two sub-themes emerged: (i) babies' health; and (ii) quality of milk.

Babies' health

The dominant benefit described by participants was the health benefits of breast milk and breast-feeding for the infant. The majority of participants described breast-feeding as the 'healthier' and 'better' choice. In addition to the health benefits, one respondent discussed her level of comfort with breast-feeding when she said:

> 'Babies are healthier, and they are less sick and less prone to get sick, and she is more comfortable with it; especially when she gets tired she can just lie down and feed the baby.' (FG1)

Quality of milk

Participants' conceptualization of breast milk being better for the baby was consistently tethered to the babies' health, especially when they were sick. One mother said:

> 'Breast-feeding is the best like when the baby is sick the baby can still eat from the breast and if the baby is sick the baby will not take the bottle.' (FG2)

Another mother said:

> 'When they are sick, they do better taking the breast.' (FG4)

In addition to the belief that breast-feeding provided the healthiest options for infants, the participants unanimously described the quality of breast milk as being:

> '… by far the best food that you can ever feed your baby. The formula can never come close to your breast milk.' (FG5)

The participants described breast milk as being 'fresh' and having 'more vitamins' (FG4). Concurrently, breast milk was described as superior to formula because there are 'more vitamins in the breast milk than in the formula milk' (FG4).

Barriers

Despite the consensus among participants that breast milk is the healthier option for infants and that the quality of breast milk is fresher and healthier, and more readily available, participants experience a myriad of barriers in their breast-feeding experiences. Within this *a priori* theme, three sub-themes emerged: (i) public shaming: verbal; (ii) public shaming: non-verbal; and (iii) work.

Public shaming: verbal

The most predominant barrier discussed among participants was the issue of breast-feeding in public. Participants explained that breast-feeding in public is acceptable in the Marshall Islands, but is not acceptable in the USA. One participant said:

> '… in the Islands you can do it freely. But here you got to cover your breasts with blankets. I feel like it is limited over here' (FG4)

Additionally, participants described how their level of comfort changes when they move to the USA and how this is predicated on verbal cues about breast-feeding in public. One participant stated:

> 'She felt more comfortable on the Islands breast-feeding than here. She said over here [in the USA] when she started breast-feeding, they would tell her there are separate areas and that's where she goes to breast-feed and … she feels that it is inappropriate in public. The welfare office said that is our way and the Island ways is different than here in the States; she [breast-feeding] is not allowed to because of [US] culture.' (FG1)

With regard to verbal cues, one participant explained:

> 'My American friends told me to use a blanket, and one of my guy friends gave me a shirt to cover up. So it is just a vibe we get and then when my relatives came and started doing that [breast-feeding] I would say here is a blanket. We get it from Americans.' (FG5)

Additionally, one participant reported:

> 'There is times when I go into dressing rooms, and I breast-feed my baby. One of the ladies said "That is really a smart thing to do because if you did it outside on the benches someone would confront you on that".' (FG2)

Another participant stated that she was told:

> '… that it is not right to show your breast in public.' (FG3)

Furthermore, one participant described that while she was breast-feeding in public she could:

> '… hear them talking bad about them [the mother and her breast-feeding infant].' (FG4)

Public shaming: non-verbal

In addition to verbal public shaming, there was comparable discussion of non-verbal public shaming. The participants described their public breast-feeding experiences with language like feeling 'uncomfortable' or 'shy', or feeling like people were looking at them with 'weird looks' (FG1, FG2, FG3, FG4). Participants' discourse surrounding public shaming with non-verbal cues was predicated on their interpretation of American culture and Americans' lack of acceptance of public breast-feeding. One participant stated 'we kind of learn to cover up' and this was predicated on the 'facial expression of the Americans' (FG5). Additionally, one participant explained that she does not breast-feed in public because she feels that 'Americans feel it is inappropriate' (FG1). Participants discussed the lack of visually seeing breast-feeding in public by American women or on television. One participant said that:

> '… most of us don't do it because we don't see Americans do it … [and when] you're walking around in the community you don't see any American moms breast-feeding in public.' (FG5)

Participants described how the non-verbal shaming and a lack of observed public breast-feeding in America affect their infant feeding choices because they want to acculturate into the USA:

> 'Yes, it's going to change because when we grew up in the Islands and we came here, we want to fit in to this community and if we don't see American women breast-feeding, we are not going to breast-feed. We want to be accepted by this community so as our children are growing up also, they are learning to think the way Americans are thinking – if they don't see it also, then they won't do it; like I said they want to be accepted.' (FG5)

Work

Participants reported that it is difficult to balance breast-feeding and work. The participants consistently discussed ceasing breast-feeding because they had to 'stop to go back to work' (FG2). Both the barriers of public shaming and work appeared to be new experiences for participants. One participant described this by stating that:

> '… in the Marshall Islands it was easier for them to breast-feed because most people didn't really have to work; here they have to.' (FG4)

Self-efficacy

Two sub-themes emerged related to self-efficacy. Participants stated that their self-efficacy was influenced because of: (i) inadequate milk supply; and (ii) maternal diet.

Inadequate milk supply

The participants discussed concerns with inadequate milk supply and that they stop breast-feeding because 'I ran out of milk', but if they had produced enough milk they 'would breast-feed more' (FG2). Inadequate milk supply is not attributed to migrating to the USA and is experienced in both geographic locations. One participant stated that:

> '… in the Marshall Islands, I wasn't producing so I stopped [breast-feeding].' (FG3)

Maternal diet

However, the participants also expressed an additional concern about the diet of the mother and this being a potential cause for inadequate milk supply. One participant said:

> 'Well, some people run out of milk but in the Islands we eat fish to produce milk.' (FG2)

Participants discussed a strong perceived link between 'diet' and milk production. Referring to milk supply, one respondent stated you need 'to eat lots of fruit and fish' as this will 'keep the baby healthy' (FG5).

Activity-related affect

The majority of participants described their decision to breast-feed and the length of time as primarily infant driven. Participants reported offering formula or breast milk based on their perception of infant's preference. Within the *a priori* code of activity-related affect, two sub-themes emerged: (i) child-led breast-feeding; and (ii) age to breast-feed.

Child-led breast-feeding

The majority of participants described their breast-feeding experience as being guided by the desires of the infant. One participant stated that if:

> '… the baby does not want to take the bottle, it is the baby's choice to not choose the bottle.' (FG1)

Another respondent stated:

> 'When the baby was born, she was taking a bottle and a few months later she stopped because she didn't like it.' (FG3)

Age to breast-feed

In addition, a majority of participants described breast-feeding their infants and/or children until the age of 'three', 'four' or 'six' years old. Some participants seemed reluctant to discuss the appropriate age, acknowledging that the Americans did not breast-feed as long.

Interpersonal and prior related behaviour

The importance of elder women who offer support to younger women, both emotional and educational, regarding breast-feeding became evident in discussions. Within this *a priori* theme respondents focused on familial support within the Marshallese culture.

Familial support in the Marshallese culture

Participants stated that their interpersonal relationships have a significant influence on their breast-feeding activities. They relayed the importance of and reliance on elder females within the community to establish belief systems and knowledge about breast-feeding. The majority of participants referenced their 'mothers' or 'grandmothers' when responding to the question about who is the most influential person in their infant feeding decision. One participant explained:

> 'My aunties and grandmothers encouraged me to breast-feed because it was healthier, they thought it was a lot more healthier so … they just recommended that breast-feeding was healthier and the other one [bottle feeding] was more expensive.' (FG5)

The influence of the elder female community members begins before the women become mothers. One participant stated that:

> 'We just know that before we became mothers that my mom told me breast-feeding is good. It is the best.' (FG5)

Additionally, participants described how traditionally the elder females aid new mothers in breast-feeding technique. One participant explained:

> 'The older ladies in the family will teach us how to take care of that [referring to latch].' (FG5)

Participants said they are highly influenced by the elder female population with regard to infant feeding choice and technique. However, they also discussed the challenge of not having access to this after migration to the USA. This is depicted in the following excerpt:

> 'We are in the US now, and our mothers aren't with us and older women in our families are not here with us who accompany us to the WIC appointments and that could be different with being in the Marshall Islands because there are older people who accompany the mother to a hospital; but here, there is that disconnect with the elder women because they are not here with us supporting us.' (FG5)

Institutional influences

The last *a priori* theme is the institutional influences the participants are experiencing. As a consequence of the lack of social and familial support that the Marshallese mothers experience as they acculturate to the USA, participants described that they become reliant on institutional support systems such as medical staff and WIC. Some of these influences are detailed in Table 3. Two sub-themes emerged within institutional support: (i) medical staff; (ii) and WIC programme influence.

Medical staff

A majority of the participants described their encounters with medical staff as being supportive of breast-feeding. One participant said:

> 'The staff encouraged me while I was in the hospital.' (FG3)

Another participant stated that:

> 'They [referring to medical staff] told me not to bring the bottle. That influenced me and my choice.' (FG3)

Additionally, one participant reported:

> 'My doctor mentioned that breast-feeding is good. He was a white person too. [All laugh] The doctor said that breast-feeding is better for the baby.' (FG1)

WIC programme influence

Another institutional influence participants discussed was accessing the WIC programme. One participant said:

> 'Breast-feeding back in the Islands was more often done than here because we couldn't afford formulas back home.' (FG4)

Table 3 Reasons for giving baby formula among Marshallese mothers (*n* 19) residing in Northwest Arkansas, USA, 2015

Response category	*n*	% of sample
If formula has been used, how was the formula chosen?		
Recommended by doctor/health professional	4	21·1
Chose same formula fed to baby at hospital	6	31·6
Heard that the formula was better for baby in some way	5	26·3
Chose formula for which received samples or coupons	3	15·8
Saw advertisement	1	5·3
Chose formula labelled as useful for a problem baby had	0	0·0
Used formula given by WIC	13	68·4
Chose same formula fed to older child	1	5·3
Recommended by friends or relatives	0	0·0
Chose formula based on low price	0	0·0
Given the formula as a gift	2	10·5

WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.
Item asked participants to check all that apply. Percentages are based on the number of responses for each item.

Another participant stated she has:

> '… the same opinion because of WIC. That's why I am giving my baby bottle, but if WIC didn't exist, I would've continued to breast-feed.' (FG3)

Additionally, some of the participants described WIC personnel as dissuading them from breast-feeding based on their diet. For example, one participant said:

> 'When the Marshallese come the WIC nurse is telling us we are unhealthy, you need to eat more of this but at the same time saying breast-feed your baby. So we are confused as it is.' (FG5)

Discussion

The discursive positions of the Marshallese participants reveal the complexities of breast-feeding within both the private and public sphere during their acculturation to US cultural norms. Marshallese participants believe that breast-feeding and breast milk are the healthiest options for infants. Additionally, the participants unanimously agreed the quality of breast milk is superior to formula and provides more nutrients for the infant, thus solidifying a strong desire to breast-feed. Despite the discourse among the participants that breast-feeding is the preferred method of infant feeding, Marshallese mothers are experiencing numerous barriers to breast-feeding as they attempt to assimilate into US culture. A predominant barrier among the participants is both the verbal and non-verbal public shaming. There is evidence that these public shaming cues are a deterrent for breast-feeding in public for Marshallese migrants. Importantly, Turner and Stetts posit that shame and embarrassment emerge from a combination of both disappointment and sadness for oneself for behaving in a way that is deemed unsuitable and are powerful social cues that can influence behaviour[50]. Thus, although the Marshallese participants expressed valuing the health benefits of breast-feeding, their acculturation to the USA – as also seen among Mexican immigrants – appears to be affecting their perceptions of breast-feeding practices[10].

Additionally, like previous research on American breast-feeding experiences[51,52], the participant mothers interviewed expressed difficulties when trying to balance work and breast-feeding. Many of them discussed the decision to cease breast-feeding because they need to return to work. Interestingly, this appears to be a new experience for these migrant mothers in the USA. Since they did not experience this while in the Marshall Islands, it suggests that the USA may not be as conducive to balancing work and breast-feeding for Marshallese mothers.

Participants also discussed concerns with producing adequate milk. The concept of inadequate milk supply is not isolated to this particular population, as previous research suggests that this is a common concern across

cultures[53]. However, a unique component to the Marshallese participants is their reliance on specific dietary practices to increase milk supply while living in the Marshall Islands. This could present a barrier for Marshallese mothers as they may not have access to the preferred foods, such as fresh fish and breadfruit, as consistently as they did in the Marshall Islands. The perceived need and reliance on traditional dietary practices to increase milk supply have also been seen among Mexican Americans[54].

Additionally, an unexpected finding was the strong influence of child-led breast-feeding. The participants consistently discussed the breast-feeding experiences as being led by the infant's desire or lack of desire to breast-feed rather than the mother's. This is an interesting insight into the cultural norms of Marshallese mothers and may help explain their longer breast-feeding durations.

Female elders are described as the primary social support – teaching women to breast-feed and helping them overcome breast-feeding concerns in the Marshall Islands. This strong social support is often not available to Marshallese mothers in the USA and many reported a lack of social support during their acculturation process. This lack of social support is concerning, as recent research has demonstrated that social support and even perceived social support are highly influential in increasing breast-feeding initiation and duration rates[29,30]. This insight reveals a potential barrier to successful breast-feeding within this migrant population who often do not have access to their traditional familial support systems.

Potentially due to the lack of familial support systems, participants described their reliance on institutional support systems, such as medical staff and WIC, for breast-feeding support. Although the participants described medical staff as being supportive of breast-feeding, their experiences with WIC appear contradictive in nature. The participants described conflicting information from WIC about the inappropriateness of breast-feeding in public, their health status being incompatible with breast-feeding and access to free formula. Although WIC is a primary venue for institutional breast-feeding support, it appears that WIC may negatively influence breast-feeding practices among Marshallese mothers.

Study strengths and limitations

The survey did not collect the location of the mother's most recent birth, and this limited our ability to discuss the location of birth and how it might influence infant feeding practices. In addition, the study utilized a non-random, purposeful sample of Marshallese mothers living in Springdale, Arkansas. This reduces the generalizability of the results. The qualitative design and sample size are appropriate for the present exploratory study. The qualitative design allows participants to share their beliefs, perceptions and lived experiences in their own words. Our exploratory study contributes to an area where there is currently a lack of research and provides insights for policy and practice. The findings can be used to develop culturally appropriate health education interventions. The CBPR partnership and involvement of native Marshallese community health workers and community co-investigators helps increase the validity of the results by ensuring that they accurately represent cultural nuances.

Future research

To address the limitations of the present study, future research should explore the perceptions and beliefs of Marshallese populations outside Springdale, Arkansas, to assess the depth of the barriers discovered herein. Additionally, future research should conduct longitudinal analyses to assess the long-term effect of acculturation on this population's breast-feeding practices.

Recommendations for policy and practice

The results of the present study suggest the need to inform policy makers of the barriers this population is experiencing in their breast-feeding endeavours once they have migrated to the USA. Based on the present results, we suggest the need for more culturally appropriate and supportive policies to be implemented in WIC that focus on: inadequate milk supply; education on breast-feeding laws and policies in the USA; and potentially an incorporation of Marshallese Breast-feeding Peer Counsellors (BFPC). BFPC are paraprofessionals that have had a successful breast-feeding relationship for at least 6 months while living in poverty and accessing WIC. Importantly, having access to BFPC has demonstrated significant increases in breast-feeding initiation and duration among their clients and may potentially provide the social and cultural support this population is lacking[55]. Currently, there are no BFPC in Northwest Arkansas and no Marshallese BFPC in the state of Arkansas.

Conclusion

In sum, although Marshallese mothers perceive breast-feeding as the healthiest option for infant feeding, they are experiencing a new set of challenges now that they have migrated to the USA. Marshallese mothers reported contending with public breast-feeding shaming, an increased challenge of balancing work and breast-feeding, concerns with inadequate milk supply, a lack of familial and social support, and conflicting institutional influences. Importantly, the participants described a strong desire for themselves and the second generation of mothers to assimilate to US cultural norms about breast-feeding. The study describes Marshallese mothers' perceptions, beliefs and experiences related to breast-feeding and illuminates how the acculturation

process may reduce support and create numerous barriers for Marshallese mothers as they attempt to breast-feed in the USA.

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