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Breastfeeding but not Exclusively: Exploration of Chinese American Mothers' Infant Feeding Practices

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Abstract

Background: Previous qualitative researchers have shown that Chinese American mothers experienced high rates of suboptimal breastfeeding, especially early introduction of other foods before the recommended 6-month period of exclusive breastfeeding.

Research aims: (1) To explore attitudes that Chinese American mothers have about the meaning and practice of exclusive breastfeeding; (2) to evaluate the extent of family pressure and support to maintain exclusive breastfeeding; and (3) to examine the influence of breastfeeding self-efficacy and the intention to continue exclusive breastfeeding.

Method: Guided by the theory of planned behavior, this descriptive cross-sectional prospective online survey was conducted with Chinese American breastfeeding mothers (N = 401). Participants' attitudes, subjective norms, and perceived behavioral control for exclusive breastfeeding behaviors were measured.

Results: The M (*SD*) age of participants was 29.14 (*SD* = 6.90). Just over 50% reported receiving family support for exclusive breastfeeding. While participants had positive attitudes about exclusive breastfeeding and the value of colostrum, 64% (n = 257) had already introduced foods other than mother's own milk before their infant was 6-months old. Participants also expressed concern that their infants did not receive enough nutrition from exclusive mother's milk. Participants with more than one child had significantly greater intention to continue exclusive breastfeeding compared to participants with only one child. Perception of approval by others for exclusive breastfeeding and breastfeeding self-efficacy were significantly related to behavioral intention to continue exclusive breastfeeding.

Conclusion: Suboptimal infant feeding is a problem for Chinese American women and may also be a problem for mothers in other ethnic groups. We found a lack of adherence with standard recommendations for sustaining 6-months of exclusive breastfeeding.

Keywords

breastfeeding, breastfeeding barriers, complementary feeding, duration of breastfeeding exclusive breastfeeding, feeding patterns, social support

Background

The health benefits of breastfeeding for mothers and infants have been endorsed globally by leading health organizations including the U.S. Centers for Disease Control (CDC, 2019), the World Health Organization (WHO, 2018), the American Academy of Pediatrics (2020) and American College of Obstetrics and Gynecology (2018), and the United Nations Children's International Fund (Schanler et al., 2014; UNICEF, 2018). While over 80% of American mothers initiate breastfeeding, by the 6-month marker only 24.9% have sustained exclusive breastfeeding (CDC, 2018). Breastfeeding initiation rates therefore do not tell the whole story. Some mothers breastfeed but begin simultaneous early introduction of complementary food. This practice then compromises both maternal and infant health benefits associated with exclusive breastfeeding (EBF) that has been

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defined as feeding infants who are "fed human milk only with no other liquid or solid given to the infant" (Noel-Weiss et al., 2012, p. 2). Close familial interdependence characterizing certain groups might mean that familial expectations regarding infant feeding choices are conveyed as normative behavioral expectations about using infant formula and early introduction of other foods (Xie & Li, 2019).

Compared to other U.S. ethnic groups, breastfeeding behaviors of Chinese American mothers have received less attention (Anstey et al., 2017; Bigman et al., 2018; Louis-Jacques et al., 2017). One reason is the relatively higher breastfeeding initiation rate among Chinese American mothers (86.4%) compared to the overall U.S. rate (83.4%; CDC, 2018). Furthermore, Dennis et al. (2019) research found that Chinese American mothers introduced complementary foods earlier than mothers in other ethnic groups. The reasons for, and the extent of, early introduction of complementary foods by Chinese American mothers have been only minimally investigated (Bai et al., 2016).

Exclusive Breastfeeding and the Theory of Planned Behavior

We applied the Theory of Planned Behavior ([TPB]; Ajzen, 1991) to investigate how attitudes, subjective norms, and perceived behavioral control influenced the duration of exclusive breastfeeding (Figure 1). As operationalized by the TPB, "attitude" entails evaluation of possible consequences associated with a behavior; "subjective norms" describe expectations held by other people; and "perceived behavioral control" focuses on personal self-efficacy facilitating or hindering enactment of behavior (Ajzen, 1991).

Several researchers have demonstrated that the TPB is useful for predicting and understanding the duration of EBF (Guo et al., 2016; Johnson-Young, 2019; Lau et al., 2018; Zhang et al., 2018). For example, in a study with U.S. mothers (N = 236) investigating the influence of TPB constructs on intention to EBF, Bai et al. (2011) found that white mothers were influenced more by subjective norms; whereas, African American and Latina mothers found behavioral control more important. Tengku Ismail et al. (2016) similarly studied the EBF behavior of 200 Malaysian women (N = 200) from pregnancy through the first month after birth. They found that the TPB explained 51% of the variance in intention to EBF with perceived behavioral control and attitude as significant predictors. They included postpartum breastfeeding support and difficulty experienced in breastfeeding as additional covariates to improve the predictive power of the TPB. Johnson-Young (2019) conducted a prospective cohort study with 156 pregnant women measuring their intention to EBF during the prenatal period, at 3 months, at 6 months, and again at 1 year. Positive attitude and perceived behavioral control significantly predicted behavioral intention at all time frames measured, whereas subjective norm was not significant. Furthermore, researchers examined reasons for discontinuation of EBF for Asian American women but often with qualitative data from a limited sample.

Key Messages

- Chinese American mothers are breastfeeding, but they are not breastfeeding exclusively.
- Concerns about whether infants receive adequate nutrition prompted participants to introduce other foods, often as early as a few days after birth.
- Families both provide support for and exert pressure on participants with respect to their breastfeeding behaviors. Normative expectations about adequate infant nutrition were problematic for inexperienced participants.

Other researchers have examined TPB components (Ajzen, 1991) dealing with attitudes about and knowledge of EBF, colostrum, and infant formula. Lee and Brann (2015) reported that Chinese American mothers had misconceptions about EBF and colostrum. Lee (2019) study revealed that some mothers were told by family that colostrum is spoiled milk and should be discarded. Bai et al. (2016) reported that Chinese American mothers introduced foods other than mother's own milk before the recommended 6 months due to misconceptions about the adequacy of mother's milk. Research about how formula is perceived by Chinese Americans is limited (Xiang et al., 2019). Positive attitudes toward infant formula pose obstacles for exclusivity and duration of breastfeeding (Sayres & Visentin, 2018). Dennis et al. (2019) found that Chinese mothers in Canada introduced other liquids and solid foods as early as a few days after birth. Zhang et al. (2018) have shown that attitude, subjective norms, and perceived behavioral control coalesce to influence breastfeeding intention and actual practice.

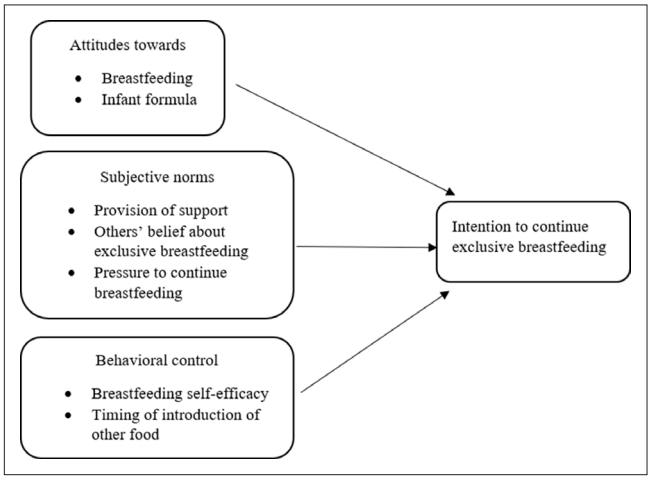

Figure 1. Components of the Theory of Planned Behavior (Ajzen, 1991) for Exclusive Breastfeeding. *Note*. EFB = Exclusive breastfeeding.

Normative beliefs, especially perception of subjective norms, influence breastfeeding choices (Clark et al., 2018; Rempel et al., 2017; Shepherd et al., 2017). Subjective norms concern the extent to which people think it important that others believe they should engage in a target behavior. Several researchers (Kuswara et al., 2016; Lee & Brann, 2015; Susiloretni et al., 2019) examined the normative influences of partners, healthcare providers, and grandmothers on EBF.

They reported that Chinese American mothers negotiated infant feeding choices with others in their close network, wherein grandmothers (mothers, mothers-in-law) were especially important and influenced infant feeding decisions and the duration of EBF.

Other investigators (Guo et al., 2016; Zhu & Yzer, 2019) supported the relationship between perceived behavioral control and individuals' intention to enact a behavior as well as actual behavioral performance. These researchers also suggested that perceived behavioral control was a significant predictor of women's intention to breastfeed.

Our study extended previous investigations of EBF based on the TPB (Ajzen, 1991) in three ways. The attitudinal construct was measured with three variables: colostrum knowledge, attitude toward EBF, and attitude toward formula. Subjective norms were assessed with partner/spouse support and family pressure. Behavioral control was measured from the perspective of EBF self-efficacy and intention to continue EBF. Finally, introduction of other foods was treated as an external moderator.

The three aims of this study were: (1) to explore attitudes that Chinese American mothers have about the meaning and practice of exclusive breastfeeding; (2) to evaluate the extent of family pressure and support to maintain exclusive breastfeeding; and (3) to examine the influence of breastfeeding self-efficacy and the intention to continue exclusive breastfeeding.

We asked the following questions:

Aim 1: Attitude. How do attitudes about knowledge of colostrum, attitude about breastfeeding, and attitude about the use of infant formula influence Chinese American mothers' intention to continue to breastfeed exclusively? How many mothers were breastfeeding exclusively at the time of participation, and, did this influence breastfeeding attitude? Were there differences in breastfeeding attitudes based on parity? What did participants report about the timing of the introduction of other foods?

Aim 2: Subjective Norms. Which important "others" influenced and supported exclusive breastfeeding among Chinese American mothers?

Aim 3: Behavioral Control. What is the relationship between breastfeeding self-efficacy and intention to continue exclusive breastfeeding for Chinese American mothers?

Method

Design

This study was a descriptive cross-sectional prospective online survey and was exploratory in nature (Lavrakes, 2008). This approach was chosen to explore information about the timing and the reasons for Chinese American mothers' departure from exclusive breastfeeding. Permission to conduct this study was obtained from the corresponding author's Institutional Review Board, which granted exempt review.

Setting

Chinese Americans represent only 1.5% of the American population including Chinese men, women, and children (U.S. Census Bureau, 2018). According to the Pew Research Center (2017) there were close to 5 million Chinese American men and women in 2015—41% had a bachelor's degree; the average income was $70.000; and there was a 6% birth rate.

Sample

Our target population was breastfeeding Chinese American women. Sample inclusion criteria were mothers living in the United States who identified as American born Chinese American, who were at least 18 years of age, and who were breastfeeding infants 9 months of age or younger at the time of participation. (We included infants slightly older than 6 months to see whether mothers continued to breastfeed exclusively). Filtering questions were used to block participants who did not meet the inclusion criteria. The sample was recruited via random sampling from Qualtrics Research Suite™ (QRS), a social research firm's standing pool of several thousand Chinese American mothers who were invited to participate in a study on breastfeeding. Participants were also recruited by QRS from several parenting and breastfeeding social media sites. While the sample was drawn from several states the largest number of participants came from California, New York, and Boston. Because of the difficulty of obtaining a sample of American born Chinese American mothers who were breastfeeding a young infant at the time of our study, we opted to include a limited sample of 45 Chinese graduate students who intended to stay in the U.S. residence, and who had American-born infants. Adequacy of the sample size was determined using a post hoc power analysis in G*Power3.1 with given α, means, and SDs. It was shown that the current sample size provided a power of .97 and was appropriate for this study.

Measurement

We measured participant age, education, income, working status, and number of children. We used in-depth measurement of the constructs of the TPB presenting psychometric

Table 1. Descriptive Statistics, Reliability, and Validity Indices for Key Variables.

Variable	*M* (*SD*)	α	χ^2	CFI	RMSEA
Colostrum knowledge	3.59 (1.56)	.89	1.03	1.002	.01
Attitude toward formula	4.20 (1.13)	.81	17.14	0.95	.11
Partner belief about EBF	4.95 (1.61)	.91	0.61	1.00	.01
Grandmother belief about EBF	5.02 (1.55)	.89	21.76	.99	.11
Provider belief about EBF	5.03 (1.52)	.94	1.99	1.00	.01
Family pressure	3.53 (1.61)	.91	13.43	.99	.06
EBF self-efficacy	5.56 (1.03)	.91	25.67	.99	.05
Intention to continue EBF	5.14 (1.06)	.88	31.33	.97	.12

Note. All *M*(*SD*) scores are based on a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*); scores above 4.00 indicate more positive attitudes. CFI = comparative fit index; RMSEA = root-mean-square error of approximation; EBF = exclusive breastfeeding, defined as feeding infants only human milk with no other liquid or solid given (Noel-Weiss et al., 2012).

evidence for the validity and reliability of multiple-item measures. Confirmatory Factor Analysis using the R-package (Chambers & Hastie, 1992; R Core Team, 2014) was conducted to test internal validity before composite scores were calculated for each variable. We compared responses of Chinese graduate students with the rest of the sample showing no differences. Table 1 summarizes validity indices for all measures.

The online questionnaire survey (see Supplemental Materials) used to investigate the EBF practices of Chinese American mothers was distributed by QRS and was electronically filled out.

Attitude (Aim 1) was measured using three variables: (a) knowledge about colostrum was measured using six items ($\alpha = .89$, $\chi^2 = 1.03$, CFI = 1.00, RMSEA = .01) from Lee and Brann (2015); (b) attitude about breastfeeding was measured using six items ($\alpha = .88$, $\chi^2 = 0.65$, CFI = 1.00, RMSEA = .01) from de la Mora et al.'s (1999) Iowa Breastfeeding Attitude Scale; and (c) attitude about the use of infant formula was measured using nine items ($\alpha = .81$, $\chi^2 = 17.14$, CFI = 0.95, RMSEA = .11) from de la Mora et al.'s (1999) Iowa Breastfeeding Attitude Scale. These three attitude variables were measured on a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). Higher mean scores indicated more agreement with the construct being measured.

Subjective Norms (Aim 2) were measured using these three variables: (a) provision of support from important "others" (with one item for each source including spouse/partner, mother, mother-in-law, friends, medical provider, coworkers, and employer) was measured using 7-items from Zhu et al. (2016); (b) "others" beliefs about breastfeeding were measured by using twelve 7-point Likert items (developed by the authors) with four items measuring spouse/partner beliefs ($\alpha = .91$, $\chi^2 = 0.61$, CFI = 1.00, RMSEA = .01), four items measuring grandmother's beliefs ($\alpha = .89$, $\chi^2 = 21.76$, CFI = 0.99, RMSEA = .11), and four items measuring healthcare provider beliefs about EBF ($\alpha = .94$, $\chi^2 = 1.99$, CFI = 1.00, RMSEA = .01). Summing and averaging the four items composed each mean score; and (c) pressure to continue breastfeeding was measured by using 10 items ($\alpha = .91$, $\chi^2 = 13.43$, CFI = 0.99, RMSEA = .06) from Santacruz-Salas et al. (2020).

Behavioral Control (Aim 3) was measured with two variables: (a) breastfeeding self-efficacy was measured using nine items ($\alpha = .91$, $\chi^2 = 25.67$, CFI = .099, RMSEA = .05) from Dennis (2003); and (b) intention to continue EBF was measured using six items ($\alpha = .88$, $\chi^2 = 31.33$, CFI = 0.97, RMSEA = .12) from Dennis et al. (2019).

A 10-item checklist measured the timing of the introduction of other foods (Burgess et al., 2019). These items included: (a) only mother's milk and nothing else; (b) mother's own milk supplemented with infant formula; (3–5) mother's own milk supplemented with sugar/honey water or juice; (c) mother's own milk plus some solid baby food purchased from stores; (d) mother's own milk plus some solid baby food that is home made; (e) infant formula; (f) infant formula mixed with cereal and rice porridge; and (g) identify other food.

Data Collection

Data collection occurred online over a 2-week period from April 1, 2019 to April 15, 2019. To gain access to this hard-to-reach population of breastfeeding Chinese American women, we hired Qualtrics Research Suite™ (Qualtrics Research Suite, 2020), a social research firm that assembles representative as well as specialized panels, to recruit participants. Participants meeting inclusion criteria were directed by a link to the portal for this study. Upon entry into the online site, the first frame showed the official consent form. By selecting the agree button, participants gave voluntary informed consent in accordance with human subjects' policy. Participants' responses were anonymous. They had the choice to leave the survey at any time. Participants who completed the survey were given a numerical code to go to a site to receive compensation. The data were then turned over by QRS to the researchers in charge

Table 2. Comparison of Mean (*SD*) TPB Scores Grouped by EBF and Non-EBF.

	M (SD)				
TPB Variable	EBF	Non-EBF	*t*	*p*	95% CI
Attitude					
Colostrum knowledge	3.94 (1.60)	3.41 (1.51)	3.35	.001	[0.20, 0.85]
Attitude about BF	5.84 (1.07)	5.52 (1.23)	2.87	.001	[0.11, 0.59]
Attitude toward formula	3.91 (1.05)	4.36 (1.15)	−3.84	.001	[−0.67, −0.22]
Subjective norm					
Support	5.47 (1.21)	5.20 (1.27)	2.09	.05	[0.02, 0.53]
Family pressure	2.90 (1.24)	3.60 (1.20)	−5.52	< .001	[−0.95, −0.45]
Behavioral control					
EBF self-efficacy	5.95 (0.87)	5.33 (1.16)	5.61	< .001	[0.40, 0.84]
Intention to continue EBF	5.82 (1.01)	5.06 (1.28)	6.20	< .001	[0.52, 1.00]

Note. All *M*(*SD*) scores are based on a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*); scores above 4.00 indicate more positive attitude. TPB = Theory of Planned Behavior; BF = breastfeeding; CI = confidence interval; EBF = exclusive breastfeeding, defined as feeding infants only human milk with no other liquid or solid given (Noel-Weiss et al., 2012).

of this study where they are being kept on a password protected data file.

The average time of completion of the survey was 11 min, as recorded on the Qualtrics data file. The survey was conducted in English. Participants were compensated with $20 for survey completion.

Data Analysis

Data were analyzed with IBM SPSS Statistics (Version 26.0). Attitudinal data (Aim 1) were analyzed using independent-sample *t*-tests, regression, and the frequency distribution. Social normative and controllability information (Aims 2 and 3) were analyzed using standard multivariate regression. Information about the strength and stability of the results was shown using 95% Confidence Intervals, effect sizes for the *t*-tests using Cohen's *d*, and model fit indices and adjusted R^2 effect sizes for results obtained through regression. Participants were grouped by those who were EBF and those who were not EBF (Table 2); and participants were grouped according to number of children (Table 3). Demographic variables of infant's age, mother's education, income, other kids, and mother's age were used as well as breastfeeding behaviors in the multivariate linear regression equation (Table 4) to predict intention to continue breastfeeding.

As shown in Figure 1, we assessed whether attitude, subjective norm, and behavioral control were related to intention to continue breastfeeding. To answer this question, standard multivariate linear regression was conducted with intention to continue breastfeeding as the criterion variable, and variables measuring attitude, subjective norm, and

Table 3. Comparison of Mean (*SD*) TPB Scores Grouped by Participants' Number of Children.

	M (SD)				
TPB variable	One child	More than one child	*t*	*p*	95% CI
Attitude					
Colostrum knowledge	3.49 (1.45)	3.78 (1.73)	1.76	.08	[−0.03, 0.60]
Attitude about BF	5.57 (1.44)	5.78 (1.24)	1.71	.08	[−0.03, 0.45]
Attitude toward formula	4.18 (1.04)	4.23 (1.27)	0.36	.72	[−0.19, 0.27]
Subjective norm					
Support	5.33 (1.16)	5.23 (1.37)	0.35	.73	[−0.35, 0.16]
Family pressure	3.38 (1.21)	3.28 (1.34)	0.76	.45	[−0.35, 0.16]
Behavioral control					
EBF self-efficacy	5.48 (1.06)	5.69 (1.16)	1.82	.07	[−0.02, 0.43]
Intention to continue EBF	5.20 (1.22)	5.55 (1.24)	−2.79	.01	[−0.11, −0.61]

Note. All *M*(*SD*) scores are based on a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*); scores above 4.00 indicate more positive attitudes. TPB = Theory of Planned Behavior; BF = breastfeeding; EBF = exclusive breastfeeding, defined as feeding infants only human milk with no other liquid or solid given (Noel-Weiss et al., 2012).

Table 4. Prediction of Participants' Intention to Continue Breastfeeding.

Predictor	*B*	*SE*	β	*t*	*p*	95% CI
Infant's age	−0.002	0.03	−.002	−0.68	.95	[.06, .06]
Education	0.002	0.03	.002	0.06	.95	[−.06, .06]
Income	−0.027	0.02	−.052	−1.35	.18	[−.07, .01]
Number of children	0.176	0.09	.069	1.98	.05	[.01, .35]
Mother's age	0.002	0.01	.011	0.32	.76	[−.01, .02]
Colostrum knowledge	0.056	0.03	.070	1.84	.07	[−.01, .12]
Attitude toward EBF	0.184	0.05	.175	3.99	.001	[.09, .28]
Attitude toward formula	0.092	0.05	−.084	−2.04	.05	[−.18, −.01]
Norm for EBF	−0.139	0.12	−.146	−1.14	.26	[−.38, .10]
Others' approval of EBF	0.286	0.04	.338	8.15	.001	[.22, .36]
Support	0.160	0.13	.161	1.28	.21	[−.09, .41]
Family pressure	0.035	0.04	.035	0.88	.38	[−.04, .11]
EBF self-efficacy	0.496	0.05	.442	10.35	.001	[.40, .59]

Note. Model Results: F (12, 384) = 43.65, $p < .001$, $R^2 = .58$, *Adj* $R^2 = .56$; EBF = exclusive breastfeeding, defined as feeding infants only human milk with no other liquid or solid (Noel-Weiss et al., 2012).

behavioral control entered as predictors, controlling for the infant's age and demographic variables including education, income, participant's age, and number of children. The continuous variables were centered to control for multicollinearity (Cohen et al., 2003). Regression results showed a significant overall model fit and a substantial adjusted R^2 effect size.

Results

Characteristics of the Sample

The sample of breastfeeding mothers ($N = 401$) included 356 Chinese American and 45 Chinese graduate students. The mean age was 29.14 years ($SD = 6.98$). The graduate students ranged in age from 24–30 (Table 5). All were first time mothers whose infants were born in the United States. Of all the participants, 63% ($n = 253$) had only one child, 68% ($n = 273$) worked outside the home, and 85% ($n = 341$) had infants who were 6 months or younger. While all participants were breastfeeding at the time of this study, only 21.7% ($n = 87$) were exclusively breastfeeding. Eleven (2.7%) participants with infants older than 6 months were EBF. The other 62% ($n = 257$) were breastfeeding but had already introduced foods other than mother's own milk.

Aim 1: Attitude

Participants who continued to EBF had a better knowledge of colostrum, a more positive attitude toward breastfeeding, less endorsement of the use of infant formula, more perceived support, less family pressure, greater breastfeeding self-efficacy, and a stronger intention to continue to breastfeed exclusively (Table 1). Participants who were not EBF had more family pressure and a more positive attitude toward the use of infant formula (Table 2).

Table 5. Distribution of Participants' Characteristics ($N = 401$).

Characteristic	*n* (%)
Age	
18–21 years	47(12)
22–30 years	205(51)
31–40 years	136(30)
> 40 years	13(7)
Education	
Did not finish high school	8(2)
High school	72(18)
Some college	84(21)
College	144(36)
Post-graduate	92(23)
Income (USD)	
25–50K	148(37)
51–75K	76(19)
76–100K	116(29)
> 100K	61(15)
Working status	
Employed	274(68.3)
Number of children	
One child	252(62.8)
Two children	104(25.9)
Three or more	45(11.1)

Note. Missing value for Education = 1.

We investigated whether there were differences in breastfeeding behaviors based on parity (Table 3). Participants with more than one child had significantly greater intention to continue EBF compared to participants with only one child. We asked about the timing and the extent to which participants introduced foods other than mother's own milk. A total of 257 (62%) participants were still breastfeeding but not exclusively. As early as the first month, 87 (33.8%) participants had already introduced other foods.

Aim 2: Subjective Norms

We asked about the influence of subjective norms on breastfeeding exclusivity (Table 1). We assessed whether participants thought their spouses/partners, grandmothers, and healthcare providers approved of EBF. Participants reported their spouse preferred EBF (53.4%, n = 214), followed by mixed feeding (23.4%, n = 94), and formula feeding only (8%, n = 32). Grandmothers and healthcare providers showed a similar preference for EBF.

Aim 3: Behavioral Control

We asked what factors contributed to intention to continue to breastfeed exclusively (Table 4). Regression results showed that breastfeeding attitude was a significant predictor of intention to continue breastfeeding, whereas intention to continue to breastfeed showed a negative relationship with attitude toward use of infant formula. Perception of approval by others for EBF was significantly related to behavioral intention to continue to EBF. The results for family pressure and support were not significant. Regression results also showed that breastfeeding self-efficacy was associated with intention to continue breastfeeding.

Discussion

Exclusive breastfeeding for the first 6 months to maximize healthy outcomes for both mother and infant is a globally endorsed health behavior as well as an important health goal within the United States (United States Breastfeeding Committee, 2020; Walters et al., 2019). While many new mothers, both in the United States and in other countries, initiate breastfeeding, most do not meet the recommended goal for duration and exclusivity (McLain et al., 2019; United States Breastfeeding Committee, 2020). Sriraman and Kellams (2016) have identified multiple barriers (prenatal, medical, sociocultural, etc.) and misconceptions that contribute to early termination of EBF. Among these barriers, early introduction of other foods is a contributory problem worldwide (Susiloretni et al., 2019). In identifying problems that women face in EBF, these researchers suggested an avenue for strategies that can be adopted to address these challenges (e.g., health promotion programs).

Our findings confirmed suboptimal infant feeding behavior for our participants, raising several questions about the extent to which some Chinese American mothers might experience guilt for wanting to stop EBF (Benoit et al., 2016). Family pressure to continue to breastfeed exclusively, though well-intended, may backfire and place undue pressure on struggling mothers who might feel overwhelmed by their role as the source of nutrition for their infant (Holcomb, 2017; Shepherd et al., 2017). Because Chinese American mothers have strong family ties and value conformity and respect for older family members, especially mothers and mothers-in-law, future researchers should continue to examine the association between subjective norms and intention to continue exclusive breastfeeding within this group (Negin et al., 2016). Multipara participants demonstrated a stronger intention to EBF. It is likely that their prior experience may have strengthened their resolve to EBF with less influence from grandmothers.

Participants had misinformation about practicing EBF. This suggested that more prenatal education is needed regarding the value and health advantages of EBF, information on benefits of colostrum, and the timing of the introduction of complementary foods (Bright & Becker, 2019). Some misconceptions about breastfeeding exclusivity and duration appeared to be reinforced in the family network. For this reason, at least some of this prenatal education should be couples' education including spouses/partners (Abbass-Dick et al., 2019). More education and training are needed for healthcare providers about the importance of promoting EBF (Patterson et al., 2020; Radoff & Forman, 2019), including prenatal education and postnatal support (Schreck et al., 2017). Support from healthcare providers concerning breastfeeding is essential (Wallenborn et al., 2017). Other reasons for suboptimal breastfeeding need to be examined, including exploring macro-level structural variables and the influence that paid maternity leave may have on influencing participants' ability to sustain a successful breastfeeding relationship with their infant.

Limitations

This study was a descriptive prospective cross-sectional survey and did not test predictions and causality among variables. Our research design did not allow us to observe ongoing changes in breastfeeding behavior over time and reasons for these changes.

The variables included in this study explained slightly more than 50% of the variance in intention to continue breastfeeding. We did not ask participants to explain their reasons for deviating from EBF. For example, did they introduce other foods because of low infant weight, pressure from family, low milk production, mastitis, a clogged duct, taking medication that could harm the infant, or some other reason? It also might be beneficial to assess personality traits that contribute to the enactment of health behaviors (e.g., being

controlling or conforming, level of ability to cope, degree of assertiveness, feelings of helplessness, and poor organization skills).

Conclusion

Framed within the Theory of Planned Behavior (Ajzen, 1991), we examined Chinese American mothers' breastfeeding practices and infant feeding choices. Attitude, subjective norms about breastfeeding, and self-efficacy influenced the participants' breastfeeding choices. Many participants were not breastfeeding exclusively and had already introduced other foods early in the breastfeeding journey. Breastfeeding self-efficacy was an important predictor of EBF. It is likely that mothers in other ethnic groups are introducing foods other than mother's milk to their infants before the recommended 6-month period of EBF. Research should compare mothers in various ethnic groups, investigating their motivations for departing from EBF.

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Declaration of Conflicting Interests

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