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308 Lasani Town, Sargodha Road, Faisalabad - Pakistan
Mob: +92 300 3008585, Fax: +92 41 8815544
E-mail: editorpjn@gmail.com

Understanding Breast-Feeding Behavior of Mothers Using a Developed Culture Specific Tool Grounded in the Theory of Planned Behavior in Western Kenya

Mary K. Walingo¹ and Lucy A. Mutuli²

¹Maasai Mara University, Box 861-20500, Narok, Kenya

²Masinde Muliro University of Science and Technology, Box 190, Kakamega, Kenya

Abstract: This study was set up to understand breast-feeding behavior of mothers using a developed culture-specific tool grounded in the Theory of Planned Behavior (TPB) in western Kenya. The methods used in the study were Mixed Methods Approaches, in-depth interviews and FGDs. About 230 breast-feeding mothers (18-40 years) attending Baby Friendly Hospital Initiatives were randomly selected for participation in the study. Data analysis was done using Factor analysis, Principle Component Analysis with Varimax rotation. The averages of intention, perceived behavioral control-2 and subjective norm communalities were 0.76, 0.82 and 0.78, respectively. A unit increase in maternal attitude and in perceived behavioral control resulted in a 4.93 units decrease of breast-feeding intention on early initiation of breast-feeding within the first hour of birth ($p = 0.0296$) and a 36.44 unit's decrease breast-feeding intention on initiation of breast-feeding within the first hour of birth ($p = 0.0151$), respectively. These results supported content and construct validity and the tool was useful in measuring factors influencing breast-feeding behaviour.

Key words: Theory of Planned Behaviour, breast-feeding Behavior, reliability, validity, psychosocial factors, Kenya

INTRODUCTION

Exclusive breast-feeding is feeding an infant with breast milk only for the first six months of life while complementary breast-feeding is one where the mother continues to breast-feed as a supplement to increasing amounts of solid food for at least the first two years of life. Although breast-feeding has health benefits for both mother and child, there are multifactorial barriers (sore nipples, mother's perception, societal barriers, low social-familial supports (Thurman and Allen, 2008) and socio-cultural factors that could influence breast-feeding behaviors. Other factors that influence breast-feeding include type of delivery, parity, alcohol consumption, occupation, education (Motee *et al.*, 2013). Socio-cultural factors vary from one community to another and affect mother's intention to breast-feed, duration of breast-feeding and attitude to breast-feed. A mother's decision to practice optimal breast-feeding is determined by a combination of psychosocial factors that include attitude, subjective norm and perceived behavioral control which need to be identified and assessed (Ajzen, 1991) and is guided not only by the mother's own underlying attitudes, skills, abilities and beliefs but also by perception of what other people think (Swanson and Power, 2005). However, there are many cultural and practical obstacles to the practice of exclusive breast-feeding (Nwankwo and Brieger, 2002) that require specific consideration in research. For example, the creation of unsupportive working environment that demands mothers to return to

work where there are no provision of lactation rooms and breast pumping breaks is an impediment to breast-feeding (Chun *et al.*, 2006; Lakati *et al.*, 2002).

In Kenya, most studies have been conducted to explore socio-demographic factors that influence breast-feeding behavior (Naanyu, 2008; Gray, 2005; Elliot *et al.*, 1985). However few studies have explored psychosocial factors influencing breast-feeding behavior and especially based on a theoretical framework (Lakati *et al.*, 2002), to develop a tool to measure breast-feeding behavior in an African context. Many tools have been developed and used to assess breast-feeding behavior (Nduati *et al.*, 2000; Dennis and Faux, 1999) in many different socio-cultural settings using pre and post-partum mothers and based on some of the concepts of the Theory of Planned Behaviour. These concepts were tested using a culture specific tool to assess the breast-feeding behaviors in setting in western Kenya.

MATERIALS AND METHODS

Research design and study setting: About 230 breast-feeding mothers (18-40 years old) with a baby aged between 0-12 months attending Baby Friendly Hospital Initiatives (Janke, 1992) in western Kenya were randomly selected for the purpose of the study. A systematic random sampling technique was employed to select eight participants for each of the three focus group discussions from a group of non-breast-feeding mothers, breast-feeding mothers with more than one

infant and breast-feeding mothers attending different postnatal clinics within age range of 18-40 years. These were perceived to have diverse attitude, subjective norm and perceived behavioral control on breast-feeding behavior thus were excluded from the study.

Development of the research instrument: Qualitative data gathered through Focus Group Discussions (FGDs) was structured to include a series of questions based on initiation of breast-feeding within the first hour of birth, exclusive breast-feeding for six months and continued breast-feeding to through the first year. These were further categorized into subjective norm, perceived behavioral control and intention (Ajzen, 1991). The subjective norm variable was measured on a 7-point likert-scale, with end points of "should optimally breast-feed (7)" and "should not optimally breast-feed (1)". This was used to elicit the mother's beliefs about significant referents' on optimal breast-feeding behavior expectations. Subjective norm was measured as the mother's perception of the emotional, instructional and informational support that she receives from significant others to practice the breast-feeding behavior in question.

Significant people to the breast-feeding mother identified included mother's partner, family members and members of medical profession/traditional birth attendant. Another set of 7-point scales evaluated "mothers' motivation to comply with significant others" expectations and contained end points (1) "not at all" and "(7) very much". The strength of each normative belief was multiplied by the corresponding motivation to comply with the belief indicated along a continuum scale ranging from 1 to 7 implying unlikely to likely. Subjective norm was also measured indirectly and required respondents to indicate the influence of significant referents of practicing the breast-feeding behavior.

Perceived behavioral control was defined as the presence or absence of requisite resources and opportunities that influenced each respondent's perception of the ease or difficulty in performing the breast-feeding behaviour. This was measured both directly and indirectly. The direct measure was obtained from each respondent's confidence in their ability to practice breast-feeding behaviour. Three items with 7-point response scales elicited mothers' perceptions of behavioral control over future breast-feeding plans. The anchors were "extremely likely (7)" to "extremely unlikely (1)". One additional item measured perceptions of confidence in ability to breast-feed on a 7-point scale, ranging from "strongly disagree (1)" to "strongly agree (7)". Breast-feeding intentions were measured with one 7-point scale, containing end points of "strongly disagree (1)" and "strongly agree (7)". The beliefs were summed up to obtain the direct measure of perceived

behavioral control. The strength of each control belief was multiplied by the corresponding power of the factor in the respondent's ability to practicing the breast-feeding behaviour and was summed up to obtain the indirect measure of perceived behavioral control. The belief statements were used to construct a culture-specific measuring tool used for the quantitative phase.

Data analysis: Constant comparative approach was used to analyze qualitative data obtained from the FGDs. All transcribed and translated texts were coded using open and axial coding, and were recorded to form categories. Statements that inter-related the categories in the coding paradigm were generated. Data was entered into SPSS version 15.0 to calculate reliability tests. Content validity was acknowledged by a statistician and two experts, who reviewed the instrument independently before the group discussion of all the experts. The instrument was pretested and a Cronbach's alpha used to assess the consistency of the concepts. Construct validity was measured by factor analysis, with the principle component analysis and Varimax rotation reported as factoring method. Criteria for extraction included Eigen values greater than 1.0, factor which accounted for at least 5% of the variance and factor loading at 0.30. Pearson correlation coefficient was used to understand the relationship between breast-feeding behavior and psychosocial factors.

Ethical considerations: Institutional approval was received from the National Council for Science and Technology and from the Ministry of Public Health and Sanitation in Kenya. The County administration was informed of the aim of the research. Informed consent from participating mothers was sought and they were briefed on the research procedures and assured of confidentiality.

RESULTS

Test for reliability of the breast-feeding tool: Breast-feeding behavior measurement tool was subjected to reliability tests at two levels to measure consistency and precision. The first reliability test was done during pretesting of the instrument whereas the second one was done after data collection. Reliability coefficients (Table 1) were grouped in factors on the 7-point likert scale measuring each concept. During pre-testing, measures of maternal attitude presented an acceptable reliability, all the measures of subjective norm and intention presented a good reliability and PBC measures presented an acceptable reliability. The tool was considered reliable with a Cronbach's alpha range of 0.51 to 0.66 on the pre-test and 0.62 to 0.92 for all concepts in the tool (Table 2). The indirect measures of attitude, subjective norm and perceived behavioral

Table 1: Attitudinal, normative and control beliefs influencing breast-feeding behavior

Beliefs	Responses	Frequency (%)	p-value (n = 16)
Attitudinal beliefs			
Initiation of breast-feeding within the first hour of birth			
Stimulates milk production	65	11	0.864 ^a
Makes future breast-feeding a success	51	-	90.687 ^a
Enhance the bonding process	76	13	0.990 ^b
Boosts baby's immunity	72	12	0.954 ^a
Confers protection against infantile diarrhoea	20	-	30.264 ^c
Quickens expulsion of placenta	28	-	50.324 ^b
A natural thing for a mother to do	21	3	0.271 ^c
Exclusive breast-feeding for six months			
Prevent various childhood illnesses	61	-	100.854 ^a
Strengthen a baby's immune system	61	-	100.821 ^a
Develop baby's IQ	31	-	50.314 ^b
Prevent breast cancer	31	-	50.324 ^b
Quickens regaining of pre-pregnancy shape	65	-	110.894 ^a
Enhance bondage between the mother and infant	15	-	20.185 ^d
Convenient no need to make up or sterilize bottles	7	-	10.127 ^d
Cheaper	13	-	20.196 ^d
Continued breast-feeding through the 1st year			
Postpones return of fertility in mothers	42	-	70.854 ^b
Reduces risks of cardiovascular diseases	34	-	50.318 ^b
Enhance neuro development in infants	42	-	60.467 ^b
Facilitate physical and emotional growth in babies	38	-	60.471 ^b
Natural and healthy way of feeding their child	20	3	0.238 ^c
Disadvantages			
Initiation of breast-feeding within the first hour of birth			
Painful nipples	78	-	130.962 ^a
caesarean births	12	-	20.194 ^c
Embarrassment	80	14	0.915 ^c
Exclusive breast-feeding for six months			
Embarrassment	81	14	0.922 ^c
Culture	59	10	0.825 ^a
Continued breast-feeding through the 1st year			
Time-consuming	71	-	110.874 ^a
Limit their social activities	71	-	110.874 ^a
Embarrassment	79	13	0.902 ^c
Normative beliefs			
Initiation of breast-feeding within the first hour of birth (Approval)			
Medical professionals/traditional birth attendant	82	14	0.952 ^a
Environment	69	10	0.833 ^c
Disapproval			
Environment	29	5	0.365 ^b
Exclusive breast-feeding for six months (Approval)			
Medical professionals/traditional birth attendant	42	7	0.836 ^b
Family Member	10	-	20.363 ^c
Disapproval			
Mother's partners	68	-	120.813 ^b
Family members	80	-	140.958 ^b
Society	64	-	110.848 ^b
Continued breast-feeding through the 1st year (Approval)			
Medical professionals/traditional birth attendant	32	5	0.329 ^b
Family members	19	-	30.251 ^c
Disapproval			
Mother's partner	12	-	20.194 ^c
Control beliefs			
Initiation of breast-feeding within the first hour of birth (Facilitators)			
Knowledge on breast-feeding	40	-	60.458 ^b
Mother's health after birth	59	-	90.672 ^b
Delivery room procedures and policies	63	-	100.832 ^a
Barrier			
Confidence	81	13	0.915 ^c
Exclusive breast-feeding for six months (Facilitator)			
Mother's and infant's health	42	7	0.631 ^b
Barriers			
Being away from the baby for long hours (work)	62	10	0.931 ^a
Feeling uncomfortable/embarrassed	38	-	60.454 ^b
Not being allowed to breast-feed in Public	21	3	0.354 ^c
Unfashionable	10	-	20.363 ^c

Table 1: Continued

Continued breast-feeding through the first year (Facilitators)			
Mother's health	35	6	0.436 ^b
Mother's breast-feeding knowledge	12	2	0.994 ^a
Barriers			
Returning to Institution of higher learning	71	12	0.913 ^a
Resuming busy schedules	72	-	120.918 ^a

Level of significance includes, ^ap<0.001, ^bp<0.01, ^cp<0.05, ^dp-values>0.05

Table 2: Reliability of direct and indirect measures of breast-feeding behaviour among post-partum women in Western Kenya

Factors/concepts	Number of Items	Cronbach's Alpha	Cronbach's Alpha Main survey (N = 230)
Pre-test (n = 23)			
Breast-feeding Behavior			
Behaviour 1	3	0.51	0.71
Behaviour 2	3	0.54	0.85
Behaviour 3	3	0.65	0.92
Attitude: Salient belief measures			
Salient Belief measures(Attitude-1)	6	0.57	0.75
Salient Belief measures(Attitude-2)	6	0.56	0.72
Salient Belief measures(Attitude-3)	6	0.57	0.68
Subjective norm; normative belief measures			
Normative belief measures(S.N-1)	6	0.56	0.80
Normative belief measures(S.N-2)	6	0.52	0.75
Normative belief measures(S.N-3)	6	0.62	0.62
Perceived behavioral control			
Control belief strength measures 1	6	0.66	0.79
Control belief strength measures 2	6	0.63	0.73
Control belief strength measures 3	6	0.61	0.72
Breast-feeding intention			
Intention towards behavior-1	3	0.58	0.79
Intention towards behavior-2	3	0.55	0.76
Intention towards behavior-3	3	0.56	0.92
Reliability of indirect measures of breast-feeding behavior indirect attitude			
Indirect subjective norm	24	0.57	0.66
Indirect Perceived behavioral control	24	0.78	0.91
	24	0.61	0.73

1 = initiation of breast-feeding within 1st hour of birth

2 = exclusive breast-feeding for six months of life

3 = continued breast-feeding through the 1st year of birth

control presented acceptable reliability when subjected to internal consistency tests (Table 2). Cronbach's alpha ranged from 0.57 to 0.78 on the pretest and 0.66 to 0.91 on the posttest, presenting acceptable reliability.

Factor analysis using direct measures of breast-feeding behaviour:

Factor analysis performed to establish construct validity for the direct measures of breast-feeding behavior are presented in Table 3. The respondents' response for each question was distinctive and the rotated component factor loading for each variable was subjected to Principal Component Analysis. Factor loading ranged from 0.53-0.81 and the alphas from 0.52-0.66 for the pretest and 0.68-0.92 for the survey. Three breast-feeding behavior variables loaded into a linear component and accounted for 57.67% of the total variance of the breast-feeding behavior variables. The average of the three breast-feeding behavior communalities of 0.76 was considered good for the measurement, confirming the unidimensionality of the construct and providing strong empirical evidence of their validity (Table 3).

Maternal attitude was categorized as A1, A2 and A3 (Table 3), where each category had a set of three

variables loaded in to one linear. A1 was labeled "maternal attitude towards early initiation of breast-feeding within the first hour of birth". Three A1 variables accounted for 50.30% of the total variance, with average of three A1 communalities of 0.76 and was acceptable for the measurement. Maternal attitude-2 component was labeled "maternal attitude towards exclusive breast-feeding for six months" and were loaded into one linear component that accounted for 58.82% for the total variance and an average of the three attitude-2 communalities of 0.70 which is acceptable for the measurement. Three attitude-3 variables, labeled "maternal attitude towards continued breast-feeding through the first year" loaded into a linear component accounted for 36.82% of total variance, with an average of 0.77 that was acceptable for measurement.

Subjective Norm (SN) was classified as SN-1, SN-2 and SN-3 each with a set of three variables loaded (Table 3) into one linear component. SN-1 component was labeled "SN towards early initiation of breast-feeding within the first hour of birth". The SN-1 variables accounted for 72.22% of the total variance with an average of 0.84 for the three SN communalities, which was good for measurement. SN-2 component was

Table 3: Validity of measures of breast-feeding behavior (N = 230)

Breast-feeding Behavior Measures Component (Factors)		
Frequency of initiation of breast-feeding within the first hour of birth (Breast-feeding Behavior-1)	0.40	-
Frequency of exclusive breast-feeding for six months of life (Breast-feeding Behavior-2)	0.88	-
Frequency of continued breast-feeding through the first year (Breast-feeding Behavior-3)	0.89	-
Average communality	0.76	-
Variance explained (%)	57.67%	-
Attitude		
Attitude-1 (initiation of breast-feeding within the first hour of birth)		
If I initiated breast-feeding within the 1st hour after birth I will be bonding with my baby	0.75	-
Breast-feeding within the 1st hour after birth enabled me stimulate milk production	0.76	-
Early initiation of breast-feeding enabled quicker expulsion of my placenta and reduced postpartum bleeding	0.78	-
Average communality	0.76	-
Variance explained (%)	50.30%	-
Attitude-2 (exclusive breast-feeding for six months of life)		
If I exclusively breast-feed I will be providing health benefits for my baby	0.68	-
Exclusively breast-feeding my infant is a convenient method of infant feeding	0.70	-
Exclusive Breast-feeding makes my breasts sag	0.73	-
Average communality	0.70	-
Variance explained (%)	58.82%	-
Attitude-3 (continue breast-feeding through the 1st year)		
If I continue breast-feeding through the second year and beyond I will be old fashioned	0.77	0.44
If I continue breast-feeding through the 1st year I will be postponing my return of fertility	0.75	-0.51
Continued breast-feeding through the 1st year will improve the health of my child	0.29	0.90
Average communality	0.77	-0.10
Variance explained (%)	56.82%	33.57%
Subjective Norm		
Subjective norm-1 (early initiation of breast-feeding within the first hour of birth)		
My husband think I	0.95	-
My family members think I	0.94	-
Members of the medical profession/traditional birth attendant think I	0.62	-
Average communality	0.84	-
Variance explained (%)	72.22%	-
Subjective norm-2 (exclusive breast-feeding for six months of life)		
My husband think I	0.80	-
My family members think I	0.53	-
Members of the medical profession/traditional birth attendant think I	0.63	-
Average communality	0.71	-
Variance explained (%)	43.95%	-
Subjective norm-3 (Continued breast-feeding through the 1st year)		
My husband think I	0.80	-
My family members think I	0.81	-
Members of the medical profession/traditional birth attendant think I	0.83	-
Average communality	0.82	-
Variance explained (%)	67.97%	-
Perceived behavioural control		
Control belief strength-1 (initiation of breast-feeding within the first hour of birth)		
My knowledge makes it possible for me to initiate breast-feeding within the first hour of birth	0.68	-
Environmental factors (hospital practices and policies) makes it possible for me to initiate early breast-feeding within the first hour of birth	0.63	-
My health makes it possible for me to initiate breast-feeding within the first hour of birth	0.69	-
Average communality	0.64	-
Variance explained (%)	47.01%	-
Control belief strength-2 (exclusive breast-feeding for six months)		
My knowledge makes it possible for me exclusive breast-feeding for six months	0.95	-
Environmental factors (hospital practices and policies) makes it possible for me to exclusive breast-feeding for six months	0.42	-
My health makes it possible for me to exclusive breast-feeding for six months	0.96	-
Average communality	0.78	-
Variance explained (%)	66.63%	-
Control belief strength -3 (Continued breast-feeding through the first year)		
My knowledge makes it possible for me to continue breast-feeding through the second year and beyond	0.85	-
Environmental factors (hospital practices and policies) makes it possible continue breast-feeding through 1st year	0.81	-
My health makes it possible for me to continued breast-feeding through the 1st year	0.74	-
Average communality	0.80	-
Variance explained (%)	64.51%	-
Breast-feeding intention		
I intended to initiate breast-feeding within the first hour of birth	0.78	-
I intend/intended to exclusively for six months of life	0.69	-
I intend continue breast-feeding for one year of life	0.81	-
Average communality	0.76	-
Variance explained (%)	68.04%	-

labeled "SN towards exclusive breast-feeding for six months of birth" with the three SN-2 variables accounting for 43.95% of the total variance and an average of 0.71 for the communalities and was acceptable for measurement. The SN-3 component was labeled "SN towards continue breast-feeding through the first year" and accounted for 67.97% of the total variance with an average of 0.82 for the three communalities, which was considered good for measurement.

Perceived Behavioral Control (PBC) was categorized as PBC-1, PBC -2 and PBC -3 (Table 3). Factor loading for each variable rotated component explained the total variance on PBC towards breast-feeding behavior. Three PBC control-1 variables labeled as "PBC towards early initiation of breast-feeding within the first hour of birth" accounted for 47.01% of the total variance with an average of 0.64 for the three PBC communalities, which was considered questionable for measurement. Three PBC-2 variables labeled "PBC towards exclusive breast-feeding for six months" loaded into a linear component accounted for 66.63% of the total variance with an average of 0.78 for the three perceived behavioral control-2 communalities which was good for the measurement. Breast-feeding intention measures (Table 3) labeled "breast-feeding intention" accounted for 68.04% of the total variance with an average of 0.76 for the three intention communalities and was considered good for the measurement.

Factor analysis using indirect measures of breast-feeding behavior: The indirect measures of attitude, SN and PBC were also subjected to a dimensionality test performed using factor analysis (Table 4). The initial variable subjected to principal component analysis focused on indirect attitude. The three indirect attitude variables loaded into one linear component accounted for 75.15% of the total variance. The average of the three indirect maternal attitude communalities was 0.84 which was considered good for the measurement. This factor was labeled "indirect maternal attitude towards breast-feeding behavior". Secondly, three indirect measures of subjective norm were loaded into a linear component accounting for 70.79% of the total variance. This factor was labeled "indirect measure of SN towards breast-feeding behavior". The average of the twelve subjective norm communalities was 0.82 which was good for measurement. Finally three variables measuring indirect PBC were loaded into a linear component accounting for 74.72% of the total variance. This factor was labeled "PBC towards breast-feeding behavior". The average of the twelve indirect attitude communalities was 0.78 which was considered acceptable for the measurement. The indirect measures of attitude, subjective norm and PBC subjected to internal consistency tests presented acceptable reliability.

Table 4: Validity of indirect measures of breast-feeding behavior

Scales (n = 230)	Components (factors)	
Indirect attitude	1	2
Attitude-1	0.84	0.11
Attitude-2	0.78	0.98
Attitude-3	0.88	0.04
Average communality	0.84	0.38
Percentage variance explained	75.15%	22.14%
Indirect subjective norm		
Subjective norm-1	0.95	-
Subjective norm-2	0.85	-
Subjective norm-3	0.53	-
Average communality	0.82	-
Percentage variance explained	70.79%	-
Indirect perceived behavioral control		
Perceived behavioral control-1	0.79	-
Perceived behavioral control-2	0.81	-
Perceived behavioral control-3	0.74	-
Average communality	0.78	-
Percentage variance explained	61.42%	-

1 = initiation of breast-feeding within 1st hour of birth

2 = exclusive breast-feeding for six months of life

3 = continued breast-feeding through the 1st year of birth

Barlett test of sphericity: To verify the data for factor analysis, the communality of variance was assessed by the Barlett Test of Sphericity. The test indicated high correlation of the items (3145.3, $p = 0.000$). The Kaiser Meyer Olkin value was 0.72 indicating an adequate sample for factor analysis. Exploratory Factor Analysis was performed for retaining and structuring the factors followed by a Principle Component Analysis performed with Varimax. Four factors were extracted, accounting for 67, 72, 67 and 65%, respectively for maternal attitude, SN, PBC and intention of variance. Maternal attitude included six items that were meant to measure behavioral beliefs and six items to assess the evaluated outcome. Subjective norm comprised six items that were aimed to assess the normative beliefs and six items to determine motivation to comply with social pressures. Perceived control encompassed six items that measured control beliefs and six items which evaluated power of the control beliefs over mother's self-confidence.

Factors influencing breast-feeding behaviour: There were (Table 5) statistically significant negative correlations between maternal attitude and early initiation of breast-feeding within the 1st hour ($p = 0.0305$) and subjective norm and exclusive breast-feeding for six months of life ($p = 0.0387$). The predictive validity of the tool was associated with the influence of the psychosocial factors. This was supported by the relationship between maternal attitude, subjective norm, perceived behavioral control, intention and the three breast-feeding behaviour. A unit increase in maternal attitude was associated with a 4.93 units decrease of breast-feeding intention on early initiation of breast-feeding within the first hour of birth ($p = 0.0296$), but all other relationships were either not significant or

Table 5: Factor Analysis of psychosocial factors related to direct and indirect measure of breast-feeding behavior of mothers

Scales (n = 230) (SD)	Mean	Construct reliability	Standardized loading	Variance extracted	Cronbach's alpha pretest (n = 23)	Cronbach's alpha survey (N = 230)
Direct measures						
Maternal attitude [MA]	-	0.70 ^a	-	0.67 ^b	-	-
MA1	4.4(1.22)	0.61	0.53	0.64	0.57	0.75
MA2	4.6(1.42)	0.68	0.64	0.66	0.56	0.72
MA3	4.5(1.25)	0.62	0.69	0.79	0.57	0.68
Subjective norm [SN]	-	0.67 ^a	-	0.72 ^b	-	-
SN1	4.6(1.43)	0.61	0.72	0.76	0.56	0.80
SN2	4.6(1.50)	0.63	0.74	0.71	0.52	0.75
SN3	4.3(1.59)	0.60	0.65	0.68	0.62	0.78
Perceived behavioral control [PBC]	-	.69 ^a	-	0.67 ^b	-	-
PBC1	4.7(1.22)	0.65	0.76	0.61	0.66	0.79
PBC2	4.5(1.32)	0.60	0.58	0.63	0.63	0.73
PBC3	4.7(1.22)	0.68	0.76	0.69	0.61	0.72
Breast-feeding intention [BI]	-	0.78 ^a	-	0.65 ^b	-	-
BI1	4.6(1.45)	0.72	0.81	0.62	0.58	0.79
BI2	4.6(1.40)	0.69	0.78	0.55	0.55	0.76
BI3	4.31(1.59)	0.70	0.65	0.73	0.56	0.92
Indirect measures						
Maternal attitude	-	0.80 ^a	-	0.75 ^b	-	-
MA1	6.5(3.02)	0.81	0.84	0.74	0.65	0.81
MA2	6.6(3.52)	0.78	0.78	0.66	0.67	0.72
MA3	6.4(3.28)	0.82	0.88	0.89	0.70	0.78
Subjective norm	-	0.78 ^a	-	0.71 ^b	-	-
SN1	6.4(3.13)	0.76	0.95	0.69	0.61	0.80
SN2	6.5(3.30)	0.63	0.85	0.77	0.64	0.75
SN3	6.4(3.59)	0.61	0.53	0.68	0.68	0.78
Perceived behavioral control	-	0.81 ^a	-	0.76 ^b	-	-
PBC1	6.1(3.02)	0.75	0.79	0.71	0.76	0.80
PBC2	6.8(3.93)	0.71	0.81	0.73	0.73	0.83
PBC3	6.3(3.44)	0.86	0.79	0.70	0.68	0.86
Breast-feeding intention	-	0.85 ^a	-	0.68 ^b	-	-
BI1	6.6(3.15)	0.82	0.70	0.62	0.63	0.74
BI2	6.7(3.04)	0.85	0.84	0.65	0.65	0.78
BI3	6.8(3.37)	0.73	0.62	0.63	0.68	0.80

^aComposite reliability of each construct

variance extracted

1 = initiation of breast-feeding within 1st hour of birth

2 = exclusive breast-feeding for six months of life

3 = continued breast-feeding through the 1st year of birth

resulted in increased unit changes. A unit increase in the PBC resulted in a 36.44 unit's decrease breast-feeding intention on initiation of breast-feeding within the first hour of birth ($p = 0.0151$).

DISCUSSION

The initial analysis of reliability and validity confirmed the rotated component factor loading for maternal attitude-1, attitude-2 and attitude-3 presented a reliability of (>0.7). The items did achieve the recommended acceptable reliability and validity coefficient. A higher PBC score in the indirect measure was associated with lower problem severity perceptions. The conceptualization and measurement of PBC in terms of confidence and perceived ease or difficulty of performing the behavior could contribute to the difference in findings between indirect and direct PBC. PBC did not correspond to actual control but exerted its effect more indirectly through breast-feeding intentions. Mothers were more confident in their ability to practice this behavior and

those with a higher sense of self-esteem reacted more positively and persisted when confronted with problems (Janke, 1994). A significant indirect PBC score on breast-feeding behavior was associated with lower problem severity perceptions in the practice of optimal breast-feeding but such relationship was not supported (Dai and Dennis, 2003) since there was not enough variance in problem perceptions to allow detection of a relationship between prenatal PBC and problem perceptions ($t = 4.1$, $df = 118$, $p < 0.01$).

Maternal attitude remained an influential construct for breast-feeding intention underscoring the value of education in breast-feeding promotion efforts. Social support was a significant influence towards development of positive attitude towards optimal breast-feeding behavior. A mother's perception of the disapproval of people in society was a hindrance to the practice of optimal breast-feeding behavior. Mothers placed a very high value on the emotional and health benefits of breast-feeding behavior and reported

“Enhancing bondage between the baby and the mother” and “boosts immunity”, as the main advantage of breast-feeding. Embarrassment negatively influenced breast-feeding behavior and was multifaceted, relating to the need to protect one’s modesty and avoidance of indecency and was the least important of the attitudinal factors influencing mothers’ intention of initiation, exclusivity and continuation of breast-feeding. Normative influences emerged from mother’s partner, family members, health professionals, traditional birth attendants, society and environment. The views of social referents significantly ($\beta = 0.25, p < 0.05$) and both social and cultural factors influenced breast-feeding intention. The initial analysis of reliability and validity confirmed the rotated component factor loading for subjective norms achieved acceptable reliability and validity coefficient.

Conclusion: The belief structures of optimal breast-feeding behavior amongst breast-feeding mothers were confirmed by having a significant proportion of the variance in intention explained by the three theoretical constructs. The understanding of these significant beliefs provides a strong foundation for quantitative research on breast-feeding behaviour in similar communities to confirm these belief structures and the development of a strong training tool for breast-feeding mothers. The use of theoretical frameworks in cultural settings could increase rates of initiation, exclusivity and continuation of breast-feeding.

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