

DEVELOPMENT AND VALIDATION OF TOOL AND ASSESS
MOTHERS INTENTION TO EXCLUSIVE BREASTFEEDING IN
DEDO WOREDA, JIMMA ZONE, OROMIA REGIONAL STATE,
SOUTH WEST ETHIOPIA: USING THEORY OF PLANNED
BEHAVIOUR

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Validation of Tool And Testing Mothers Intention to Exclusive Breastfeeding in Dedo Woreda, Jimma Zone Oromiya Regional State, South West Ethiopia.

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Abstract

Background: Promoting optimal breastfeeding has immediate and long lasting benefit for child by reducing morbidity and mortality. In Ethiopia, only about 58 percent of infants less than 6 months are exclusively breastfed. Intensive search of literature was done and one study was obtained which was done using the theory of planned behaviour in the north Ethiopia. But that study didn't validate tool according to our country context. However, using validated tool has a paramount importance to determine determinants of intention to exclusive breastfeeding by adhering to local context, and thereby avoids the cross cultural difference. Therefore this study aims at developing and validating tool of exclusive breastfeeding by using the theory of planned behaviour following the Icek Ajzen's advice

Objective: To develop and validate the theory of planned behaviour questionnaire on exclusive breast feeding and to assess mothers' intension to exclusive breastfeeding in the study area.

Method: A community based cross-sectional study design was employed from April 13-30, 2017. The first three phases of a research programme employing the theory are described: belief elicitation, questionnaire development and a pilot study. First, an elicitation study was conducted to identify the modal salient beliefs. Then, the questionnaire was constructed, incorporating all the key theoretical constructs and both direct and belief-based measures.

Result: The Items have shown good validity and reliability. Subjective norm explained 23.29 % of the variance in intention while attitude and perceived behavioural control explained 20.59% and 13.67% respectively. Theory of Planned Behaviour explained 58.45% of the variance in intention to EBF. The cronbach's alpha of items of attitude and subjective norm is. 744 and .796 and respectively, while items of PBC have poor reliability (cronbach's alpha=.529) hence need modification. Attitude has shown strong association with intension to Exclusive breastfeeding [standardized β = .427at 95.0%, CI (.328, .497)]

Conclusion: The items are valid and have good internal consistency (reliable) in general while some items of perceived behavioural control may need modification

Recommendation: Studies conducted on this topic by using this model are rare that this study alone may not satisfy this shortage so another study might be important. The tool is valid and reliable so that anyone who wants to conduct study on this topic can utilize this tool.

Key Words: Exclusive Breastfeeding, TPB, Variations, Tool Validation

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Abbreviations Acronyms

CSA	Central Statistical Agency
DA	Direct attitude
DSN	Direct subjective norm
DPBC	Direct perceived behavioural control
EAs	Enumeration areas
EBF	Exclusive breastfeeding
EDHS	Ethiopia Demographic and Health Survey
EPHC	Ethiopian Population and Housing Census
EPHI	Ethiopia Public Health Institute
HEW	Health extension worker
HF	Health facility
IA	Indirect attitude
IRB	Institutional Review Board
IPBC	Indirect perceived behavioural control
ISN	Indirect subjective norm
PBC	Perceived Behavioural Control
SN	Subjective Norm
TRA	Theory of Reasoned Action
TPB	Theory of Planned Behaviour
FMOE	Federal Ministry Of Health

ORHB	Oromiya Regional Health Bureau
UK	United Kingdom
UNICEF	United Nations Children's Fund
USA	United States of America
WHO	World Health Organization
WoHO	Woreda health office

CHAPTER ONE: Introduction

1.1 Background

Breast milk is believed to be a perfect, natural and protective food for infants and children. Promoting optimal breastfeeding has immediate and long lasting benefit for child by reducing morbidity and mortality from preventable common childhood killer diseases such as pneumonia and diarrhoea hence increase survival (1)

Exclusive breastfeeding is defined as the infant receiving only breast milk with no supplementation of water, juice, formulas or other liquids and foods, with the exception of vitamins or minerals, oral rehydration salts and medications (1, 3).

World Health Organization (WHO) and United Nations Children's Fund (UNICEF) recommend that all mothers should breastfeed their children exclusively for the first 6 months and thereafter they should continue breastfeeding until 2 years of age (1-3).

Infants when exclusively breastfed for the optimal duration of six months are significantly protected against the major childhood diseases conditions, diarrhoea, gastrointestinal tract infection, allergic diseases, diabetes, obesity, childhood leukaemia and lymphoma, inflammatory and bowel disease (2,4).

Many studies identified a number of factors that determine mother's exclusive breastfeeding and intention is identified as one of the main predictors of exclusive breastfeeding. On the other hand intention is best explained by Theory of Planned Behaviour (TPB). According to the revised (2006), Theory Of Planned Behaviour, human action is guided by three kinds of Considerations: beliefs about the likely outcomes of the behaviour and the evaluations of these outcomes (behavioural beliefs), beliefs about the normative expectations of others and motivation to comply with these expectations (normative beliefs), and beliefs about the presence of factors that may facilitate or impede performance of the behaviour and the perceived power of these factors (control beliefs) (5).

In their respective aggregates, behavioural beliefs produce a favourable or unfavourable attitude; normative beliefs result in subjective norm; and control beliefs give rise to perceived behavioural control. In combination, attitude, subjective norm, and perception of behavioural control lead to the formation of intention. As a general rule, the more favourable the attitude and subjective

norm, and the greater the perceived control, the stronger should be the person's intention to perform the behaviour in question (5, 6).

Intensive search of literature was done and only one study was obtained which was done using the theory of planned behaviour in the north Ethiopia. But that study didn't validate tool according to our country context (7).

However, using validated tool has a paramount importance to determine determinants of intention to exclusive breastfeeding by adhering to local context, and thereby avoids the cross cultural difference.

Therefore this study aims at developing and validating tool of exclusive breastfeeding by using the theory of planned behaviour following the Icek Ajzen's advice.

Problem statement

Suboptimal breast feeding, especially lack of exclusive breastfeeding is the major contributor for infant and child mortality. Out of the about nine million children that die each year globally, over two-thirds of these deaths are associated with inappropriate feeding practices and occur in the first year of life (8).

About 41% of global under five death occurs in sub Saharan and 34% in south Asia, mainly due to inadequate breastfeeding practices especially exclusive breastfeeding and related problems (9,10).

In Ethiopia, even though breastfeeding is nearly universal, only about 58 percent of infants under 6 months are exclusively breastfed. Contrary to WHO's recommendation for exclusive breastfeeding up to 6 months of life, 17 % of infants 0-5 months consume plain water, 5 %, each, consume non milk liquids or other milk, and 11 % consume complementary foods in addition to breast milk. Five % of infants under age 6 months are not breastfed at all (9).

The percentage exclusively breastfed decreases sharply with age from 74 % of infants age 0-1 month to 64 % of those age 2-3 months and, further, to 36 % of infants age 4-5 months. Nine percent of infants under 6 months use a bottle with a nipple, a practice that is discouraged because of the risk of illness to the child (9, 10).

Many empirical based descriptive studies have been conducted in Jimma zone and other parts of the country at different times and identified demographic, psychosocial factors such as having good knowledge on breastfeeding, age of infants, lower parity, education, painful breastfeeding experiences, having antenatal care visit, and the like (11).

However, only one theory based study has been conducted in this area, regarding this issue and no validated tool in this study area on this topic, as well as at national level (12).

Therefore this study aims at developing and validating the Theory of Planned Behaviour questionnaire and utilizes it to assess mother's intention to breastfeed in the study

CHAPTER TWO: LITERATURE REVIEW

2.1. Validation of the Questionnaire

A study conducted in Kenya showed that the tools of Theory Of Planned Behaviour on exclusive breastfeeding were valid and reliable and cronbach's alpha of all components were greater than .90 and the theory explained 85 % of variations in mothers intention to exclusive breastfeeding and the constructs independently predicted 60 % of the variations among the study subjects (13)

However, a systematic review conducted in UK reported that out of the total 154 meta-analysis of application of the Theory of planned behaviour, behavioural intention was normally predicted by the three components of the direct predictors of the theory of the planned behaviour with mean coefficient of determination, $R^2 = .39$, indicating that Theory of Planned behaviour has good predictive ability in general (14)

A case control study conducted in UK on "Initiation and continuation of breastfeeding: theory of planned" Behaviour" (among those who breastfeed and bottle feeding) by using theory of planned behaviour showed the reliability of behavioural belief and normative belief with chronbach's alpha of 0 .74 and 0.75, respectively (15)

Another study carried out in Hong Kong on "Theory of planned behaviour-based models for breastfeeding durations" revealed that the items of the direct predictors of the model has shown high reliability through their calculated Cronach's alpha to be .90, .80 and .89, respectively but no report was included about the validity and correlation coefficient in the document (16)

A study conducted in UK on "Measuring young people's attitudes to breastfeeding, using the Theory of Planned Behaviour" reported that most scales showed good reliability but didn't support the report with statistical figures (17).

2.2. Prediction of Intention to Exclusive Breastfeeding

Study conducted in Kenya on applicability of the theory of the planned behaviour in understanding breastfeeding intention of postpartum women have showed that attitude factor

produced the most significant correlation with breastfeeding intention for respondents, followed by subjective norm, perceived behavioural control and self-efficacy. The same study have also showed that the intention to optimally breastfeed was also significantly related with woman's breastfeeding knowledge ($r=0.614$, $p<0.001$) thus this reinforces the finding that optimal breastfeeding behaviour might be more likely practised if knowledge of the mothers increase .On the other hand, cohort study conducted in Malaysia on the same topic demonstrated a weak positive attitude towards practicing exclusive breastfeeding for six months (scale range: -3 to + 3, mean = 0.8). As per the report of the study, perceived norm, or perceived social pressure to perform the behaviour was neither positive nor negative (scale range: 1 to 7, mean = 4.2). The finding on perceived behavioural control indicated a weak but positive perceived behavioural control in practicing exclusive breastfeeding for six months (scale range: 1 to 7, mean= 4.8), and concluded that the theory had good predicting ability in explaining the exclusive breastfeeding (13,18).

Similarly, study conducted in Kansas and Malaysia is in agreement with this finding where the theory of planned behaviour has demonstrated a good goodness of fit by explaining statistically significant proportions of variance in mother's intention to exclusively breastfeed their infant for six month.this was confirmed in the regression analysis report in that the independent predictors of intention (attitude toward exclusive breastfeeding and perceived behavioural control) are able to predict variation in intention to EBF by 23% while subjective norm failed to fulfil statistical criteria to enter in to the regression analysis model (18, 19).

In contrary to this finding a research report from Hong Kong stands on the opposite corner by concluding that the theory of planned behaviour displayed poor goodness of fit to explain the possible amount of variation in mothers intention to practice exclusive breastfeeding in the study area and called forth to add other important additional factors to explain the appropriate amount of variance the dependant variable (16).

However, a systematic review study carried out in UK reported that out of the total 154 meta-analysis of application of the Theory of planned behaviour, behavioural intention was normally predicted by the three components of the direct predictors of the theory of the planned behaviour with mean coefficient of determination, $R^2= .39$, indicating that Theory of Planned behaviour has good predictive ability in general (14, 16, 19).

Based on the review of literatures, there is no sufficient literature on the theory based study and also there is validated Exclusive breastfeeding – Theory of Planned Behaviour - questionnaire that evaluated the intention of pregnant women to exclusively breastfeed, in the study area as well as at national level.

2.3. CONCEPTUAL FRAMEWORK

According to the model (TPB), attitude toward the behaviour (EBF in our case), subjective norm which is a social pressure on EBF and perceive behavioural control (over the difficulties of the EBF) are proximal (immediate) determinants of intention to breastfeeding while the salient modals (belief) are the distal one. Socio-demographic variables are a background determinant factors but they are not part of the theory (fig.1).

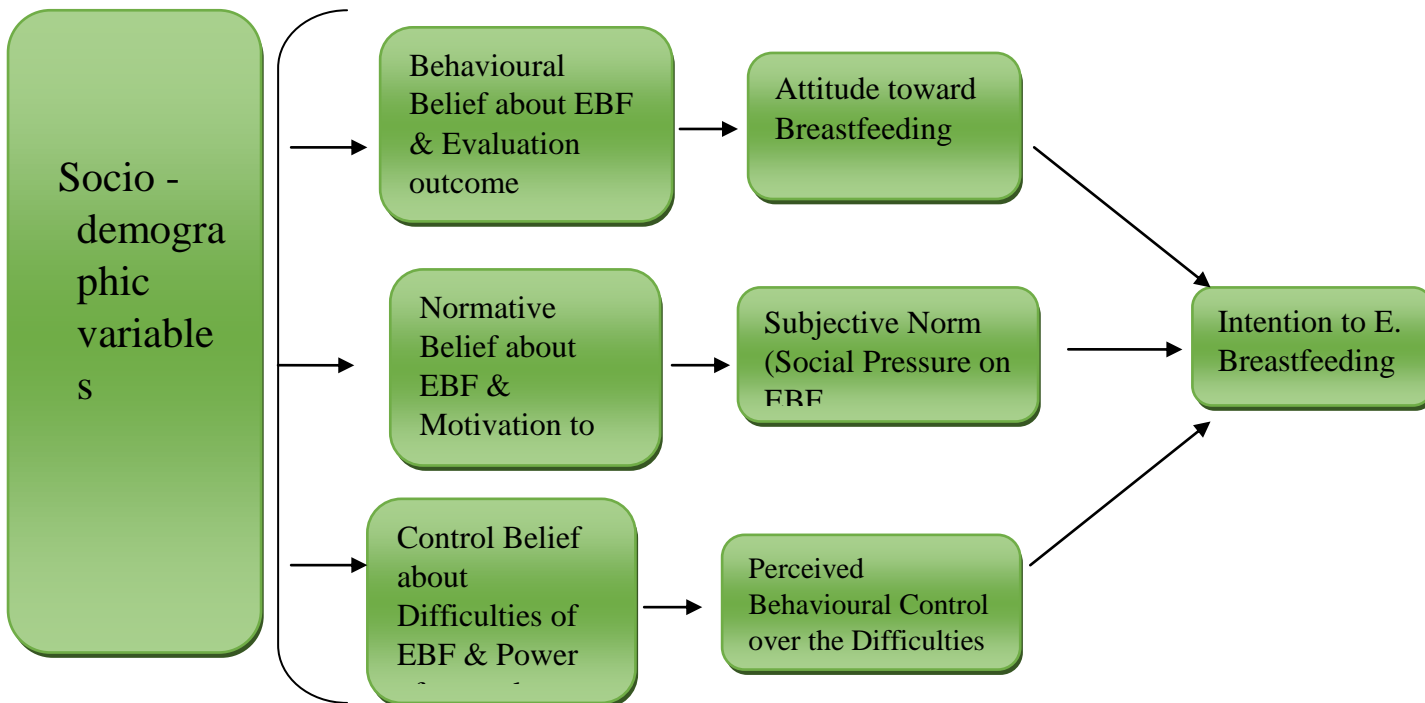


Figure 1 Conceptual Frame Work of Theory of Planned Behaviour Adopted From Icek Ajzen 2006

2.4. Significance of the study

The quality of studies or the validity and reliability of any research finding is highly affected by the quality of the tools/materials used. In other words, using validated tools in any study will ensure the reliability and validity of the findings.

Oftentimes, theory based study are preferable and particularly, Theory of Planned Behaviour based study is preferable in that, (1) the presence of a measure of intention that mediates the relationship between other cognitive factors with intention (2) it explicitly covers the normative influences on intention, (3) the definitions and measures of the constructs are clear and cost-cutting, and (4) it includes the temporal relationship between the cognitive variables and distinguish between proximal and distal determinants of intention

The theory is widely used across various social behaviours and is gaining popularity to guide studies on breastfeeding (10, 12).

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Therefore, this study aims to apply Ajzen's theory to develop and validate a Exclusive breastfeeding - Theory of Planned Behaviour questionnaire as well as to evaluate pregnant women's intention to exclusively breastfeed for six months.

This study will contribute by availing a validated tool for future studies to be conducted on this topic in Ethiopia.

In addition, this study can be used as a baseline for those who want to conduct further study on this topic. Oromiya Regional Health Biro, Jimma zone health office and Dedo Woreda Health Office can use findings from this study to design an intervention that aims to increase rate of exclusive breastfeeding in the area.

CHAPTER THREE: Objectives

3.1. General Objective

To develop and validate the theory of planned behaviour questionnaire on exclusive breast feeding and to assess mothers intension to exclusive breastfeeding.

3.2. Specific Objectives

- To identify the modal salient beliefs underlying pregnant women's intention to exclusively breastfeed among pregnant women
- To validate exclusive breastfeeding exclusive breastfeeding questionnaire – based on TPB - among pregnant women in DedoWoreda.
- To assess pregnant women intention to exclusive breastfeeding

CHAPTER FOUR: METHODS AND MATERIALS

4.1. Study area and period

This research is part of the Jimma University mega project conducted in Dedo woreda. Dedo Woreda is among one of the 21 woredas found in Jimma Zone located 23 km away from Jimma town, the capital of the Zone to the south and 367 km from capital Addis Ababa. Dedo woreda is a densely populated district with total population estimated to be 224,051 of which about 112,000 of them are females.

Female in reproductive age group and children under 5 years of age are estimated to be 49963 and 36744, respectively. According to population projection (statistical estimation) obtained from the woreda, about 7600 pregnant women are expected in the Woreda this year.

The woreda has 1 primary hospital, 8 HCs and 37 health posts structured as primary health care unit to serve the rural community. However, only 2 of the above health centers possess electricity and 3 have some source of water supply while the remaining majority of health facilities in the woreda have neither electricity nor water supply.

4.2. Study period

This study was conducted from April 13 to 30, 2017

4.3. Study design

A community based cross-sectional study design involving both qualitative and quantitative methods of data collection was employed.

4.4. Population

4.4.1. Target population

All pregnant mothers in Dedo Woreda

4.4.2. Source population

Pregnant women in Dedo woreda who are in the second and third gestational age

4.4.3. Study population

Pregnant women whose gestational age was between 28 and 34 weeks who reside in the in the woreda at least for six month

4.4.4. Study unit

Pregnant women in the interval of 28 and 34 weeks gestational age

4.5. Inclusion and exclusion criteria

4.5.1. Inclusion Criteria

Pregnant mothers whose pregnancy is in the interval of 28 and 34 weeks gestational age and who lived in the study area at least for six month.

4.5.2. Exclusion criteria

Pregnant mothers whose pregnancy is in the interval of 28 and 34 weeks gestational age and who lived in the study area at least for six month but who cannot give consent because of mental illness and those who have a known serious breast problem and medically contra indicated for breastfeeding because of it.

4.6. Samplee size determination and sampling technique

4.6.1 Sample size determination

Sample size was calculated using a single population proportion formula with the following assumptions: margin of sampling error to be tolerated= 5% (0.05), confidence interval at 95%, p=0.5 since there is no previous study in the country

$$n = Z_{\frac{\alpha}{2}}^2 \sigma^2 / d^2$$

Where:

n = minimum sample size required

$Z_{\alpha/2}$ = Critical value at 95% confidence interval certainty = 1.96

P = since there is no previous study in Ethiopia (no magnitude of intention to breastfeed is available) variance of 0.5 was taken to get maximum sample size. Hence: σ^2 variance = .5

d = margin of sampling error to be tolerated= 5% (0.05), at 95% confidence interval of certainty the sample size for the quantitative study will be 384. Then by adding 10% non-response rate the final sample size was 422

4.6.2. Sampling technique

Situational analysis was done in the study area before determining the sampling method to be employed and to estimate the number of pregnant women in the woreda.

Accordingly, the list of pregnant mothers which was updated by health extension workers for that particular month was obtained from the woreda health office. Then based on the results of the situational analysis decision was made to include all kebeles in the study area.

Then, pregnant mothers whose gestational age is in the intended age interval are identified and listed. The numbers of those who fulfil inclusion criteria differ from sample by very small number. Then census was employed.

4.6. Data collection instrument

Data collection instrument is prepared by the Mega Project following the guideline of the Icek Ajzen (TPB) in three different phases.

Phase 1: Belief elicitation

Ten indepth interviews were conducted in Seka district to identify salient modal beliefs of pregnant women regarding exclusive breastfeeding. Following the advice of Ajzen, a series of nine open ended questions were asked to identify their beliefs. Each interview lasted 25 minutes and was voice recorded. Each participant received 30 ETB for transportation.

Phase 2: Questionnaire design

After two investigators reviewed the content of each interview individually using a standardized data extraction form and identified common themes reported by participants, the results were pooled and themes that had been reported at least two times (representing 25% of the participants) were kept as salient modal beliefs. A questionnaire was developed in which each of the salient modal beliefs was used as an item to evaluate the TPB constructs. Based on number of items to be prepared for each construct, each of the questions was assessed using a 5-point Likert scale. Moreover, socio-demographic questions were included in the questionnaire. After questionnaire development is finalized, it was assessed for face validity and content validity by expert panels and pretested at Seka Health Center. Based on results of the pretest necessary modifications were made.

Phase 3: Validation of the instrument

Finally, the questionnaire was validated on a sample of 417 women to identify and assess the relative importance of the determinants of breastfeeding intention.

4.7. Data collection method

Data was collected by face to face interview

4.8. Study variables

4.8.1 Dependant variables

Mother's intention to exclusive breastfeeding

4.8.2 Independent variables

Salient beliefs: Behavioural belief, normative belief, Control belief

Constructs of TPB: Attitude toward the behaviour, Subjective norm, perceived behavioural control,

Socio-demographic variables: age, ethnicity, religion, educational status, family income

4.9. Data quality control

Ten diploma nurse/midwives who are fluent Afaan Oromoo speakers and two supervisors from Bsc nurse were employed and trained. The questionnaire was translated into Afaan Oromoo and translated back to English by different translator to ensure consistency. Each day after data collection, supervisors checked the questionnaire for consistency and completeness.

4.10. Data analysis

The data was entered into an Epidata version 3.1 and exported to SPSS version 21.0 for analysis. Descriptive analysis of socio-demographic characteristics and theoretical variables were examined.

Negatively worded items were recorded into same variables before starting analysis to make in line with positively worded items there by to simplify for analysis.

The weighted indirect belief of the each of the construct was correlated with its corresponding direct predictor of intension (constructs) to determine the underlying factor that influences women intention to EBF.

Exploratory factor analysis was done to identify items that adhere to the TPB constructs as well as to determine the amount of variations the constructs explain in intention. While proceeding with factor analysis, all assumptions to be fulfilled for factor analysis were checked. Hence, KMO measure of sample adequacy (MSA) test was checked and it is greater then cut off point for all components ($> .5$)

Bartlett's test of sphericity was checked and it is statistically significant for all. The ratio of cases to variables is also checked and it is greater than 5:1 for all factors.

The entire correlation matrix contained more than two variables with correlation coefficient of greater than two. Having checked all the assumptions, correlation coefficient was calculated and a variable with correlation coefficient less than 0.3 was removed from the dialog box and the step is repeated again until all the correlation coefficient of all the variables in matrix become greater than the cut of point (> 0.3). Anti image was also seen for all correlations and it statistically significant. Collinearity problem was checked and determinant coefficient was $> .0001$ for the entire correlation matrix.

Communality was calculated based on eigenvalue greater than 1 to see the proportion of variance in the variables that is accounted for by the factor solutions. Accordingly, an item with a communality value less than 0.5 was removed one by one and the step is repeated until the communality value for each item become more than the cut of point (0.5).

Then Equamax rotation was used for those component matrixes with more than one component. Linear regression analysis was also done to determine the independent predictors of intention to exclusive breastfeed. Internal consistency of the items was also checked and to test its reliability. Multi collinearity problem was also checked during regression analysis by exploring variance inflation factor and tolerance.

4.9. Ethical consideration

Before the fieldwork, ethical clearance was obtained from IRB of Institute of Health, Jimma University. Then formal letter of cooperation was written from Jimma zone health office to Dedo Woreda Health Office. Informed consent was obtained from respondents and the clients were informed prior to the interview that they have full right to discontinue or refuse participating in the study and at the same time data collectors were trained on how to handle and reassure respondent's issue of confidentiality as well.

4.10. Result dissemination and utilization

The results of the study will be presented to Jimma University, Department of Population and Family Health, as part of MPH thesis. The findings will also be communicated to the Regional Health Bureaus, Zonal Health Office and Dedo Woreda Health Office. Besides, organizations working in this area such as, UNICEF Ethiopia, Save the Children and other relevant organizations will be informed to use the findings

for modification of their service delivery strategies. Attempts will be made to present the results on scientific conferences and to publish the results of the study on local or international journal.

4.12. Operational definitions

Behavioral intention of EBF- this referred to the individual's plan to conduct EBF in the near future (just after delivery) and was measured by using 5-point unipolar likert scale with ranges "strongly disagree(1)" up to "strongly agree (5)" response format. A sum score was constructed by adding the items. The higher the score in the intention shows the strong the intention.

Attitude toward the EBF - this means an individual's predisposition to respond in a favourable or unfavourable manner toward EBF.

Direct measurement of attitude: measured using 5-point unipolar likert scale with ranges "strongly disagree(1)" up to "strongly agree (5)" response format which are judgmental, items that are negatively worded points were recoded and summed, so that higher numbers reflect a positive attitude to EBF

For indirect measurement of attitude, behavioural belief items with five point Likert scale score was multiplied with its corresponding outcome evaluation on unipolar scale and then summed to calculate composite score of indirect attitude scale. In which higher scores indicate more positive attitude towards EBF

Subjective EBF norms- this is an individual's perception that significant others, in general, think that the individual APPLYEBF as a normative action and measured using 5-point unipolar likert scale with ranges "strongly disagree (1)" up to "strongly agree (5)" response format which are judgmental; the items that have negatively worded were recoded and the responses was summed and then average is calculated, so that higher numbers reflects referent others of that respondent approve EBF.

For indirect measurement of SN, ISN items with five point Likert scale score was multiplied with its corresponding motivation to comply of similar scale and then summed to calculate composite score of indirect SN scale, in which higher scores indicate more positive attitude towards EBF

Perceived behavioral control towards EBF- this indicated an individual's confidence about EBF just after delivery if they desired to EBF and was measured using 5-point uni polar likert scale with ranges "strongly disagree (1)" up to "strongly agree (5)" response format which are judgmental; the items that have negatively worded were recorded and the responses was summed and then average is calculated, so that higher numbers reflects referent others of that respondent approve EBF.

For the indirect PBC, the control belief items was multiplied by those of perceived power to control the beliefs and summing these product scores to calculate score in which higher scores indicate a greater of perceived behavioural control concerning EBF

CHAPTER -5: REUSLT

5.1 Socio-demographic characteristics

A total of 417 pregnant women have participated in this study making the response rate of 98.8 %. The respondents mean age was 26.45(SD± 5). Majority of the respondents were from Oromo ethnic group 399 (95.7%), Muslims 401 (96.2%) by religion and married 383 (91.8%) . Concerning educational status, most of the participants 346 (83.0 %) cannot read and write. Majority of women 412 (98.8%) and their husbands 408 (97.8%) were house wives and farmers by occupation, respectively. Items of income, 201 (48.2%) women had income less than 500ETB whereas 194 (46.5%) women had income 501-1000ETB (Table 1).

Table 1 Socio-demographic characteristics of respondents' in Dido district southwest Ethiopia, 2017

Variables	Frequency (n)	Percent (%)
Maternal age		
15-24	130	31.2
25- 34	249	59.7
35+	38	9.1
Ethnicity		
Oromoo	399	95.7
Dawuro	8	1.9
Yam	5	1.2
Other*	5	1.2
Marital status		

Married	383	91.8
Single	30	7.2
Other**	4	1.0
Educational status		
Illiterate	346	83.0
Read and write	41	9.8
Primary	22	5.3
High school and above	8	1.9
Religion		
Muslim	401	96.2
Orthodox	10	2.4
Others***	6	1.4
Mothers Occupation		
Housewife	412	98.8
Others[^]	5	1.2
Husband Occupation		
Farmer	408	97.8
Merchant	7	1.7
Others^Δ	2	0.5
Income		
1-500	201	48.2
501-1000	194	46.5
>1000	22	5.3

NB * Amhara, Kefa, Tigre, ** Widowed, Divorced *** Protestant, Catholic, Wakefata,

[^]Government-employee, self- employee, student ^Δ Government-employee, self- employee,

5.2 Indirect measures of attitude, subjective norm and perceived behavioural control analysis

The weighted indirect belief of the each of the construct was correlated with its corresponding direct predictor of intention (constructs) to determine the underlying factor that influences women's intention to EBF.

First pairs of items (the belief and their corresponding outcome evaluations) were weighted (multiplied with each other) and then the weighted figure is summed up. Accordingly, items of behavioural belief were weighted (multiplied) with their corresponding items under outcome evaluation and then summed up. Similarly, items of indirect perceived control (control belief and power of control/self-efficacy) were weighted and perceived behavioural control.

Then, Pearson correlation calculation was done between these weighted items and constructs. Items of attitude beliefs (behavioural belief and outcome evaluation) were strongly correlated with direct attitude ($r=.430$, $p < 0.001$). However, items of control belief (behavioural control belief and power of control), though statistically significant had moderate correlation with perceived behavioural control ($r=.225$, $p \text{ value} < 0.000$). On the other hand, items of the indirect subjective norm have shown poor correlation ($r=.07$, $p < 0.05$) with the direct subjective norm. Association (correlation) between the direct predictors and intention was also assessed (Table 2).

Table 2 Correlations between the modal salient's and Intention.

Correlations					
		Intention	Indirect PBC	Indirect Sub. norm	Indirect attitude .
Intention score	Pearson Correlation	1	.235**	.274**	.413**
Ind. PBC	Pearson Correlation	.235**	1	.191**	.242**
Ind. Sub. Norm	Pearson Correlation	.274**	.191**	1	.398**
Ind. Attitude	Pearson Correlation	.413**	.242**	.398**	1
**. Correlation is significant at the 0.01 level					

Mean value and standard deviation of the direct predictors and intention are: Attitude score (.62; ±.48), subjective norm (.49; ±.50), perceived behavioural control (.59; ±.49) and intention (.67; ±.46).

5.3 Exploratory Factor analysis on direct measures of attitude, subjective norm and perceived behavioural control items

Factor analysis was started by checking assumption. Accordingly, KMO (MSA- Kaiser Meyer Olkin Measure of sampling adequacy) was .785, .656 and .637 for Attitude, Subjective Norm and Perceived Behavioural Control respectively. Bartlett's test of sphericity was also checked and it is significant at p value <.000 for all constructs and there were no items with correlation coefficient =.9 and above i.e there were no problem of multicollinearity.

Out of the total 22 items (11 items from attitude, 6 items from subjective norm and 5 items from PBC) 10 items loaded on 3 factors: four items from attitude loaded on factor 2, three items from subjective norm loaded on factor 1, and the rest three items loaded on factor 3 from PCB (Table 3).

The result shows that subjective norm explained 23.29 % of the variance while attitude, and perceive behavioural control explained 21.49% and 13.67%, respectively. The model in total explained 58.45 % of the variance in the intention (Table 3).

Table 3 Showing Results Of Factor Analysis and Reliability Test Combined

Component matrix of the direct predictors of intention						
Items	Components			Category of items	alpha	Variance explained
	1	2	3			
I am not expected to EBF	.889			Subjective norm	.796	23.29
most mothers I know don't EBF	.818					
I am under social pressure to EBF	.809					
Breastfeeding increase mother baby closeness		.754		Attitude	.744	20.49
Breastfeeding protect baby from sickness		.744				
Boringness of exclusive breastfeeding		.703				
Pleasantness of exclusive breastfeeding		.636				
EBF is entirely up to me			.762	PBC	.529	13.67
I am confident that I will exclusively BF			.754			
For me breastfeeding is conditional			.661			
Total variance explained after rotation.						58.45

5.4 Reliability Test of the Items

The internal consistency of the all items grouped together to measure the same idea (construct) were analysed together. Accordingly, reliability analysis of items of attitude, subjective norm and perceived behavioural control are: .744, .796 and .529, respectively.

5.5 Predictors of intention to EBF

Multiple linear regression model were used to estimate the association between the direct constructs and intention. Statistical significance was established at the $P < 0.05$ level, with all tests being two-tailed. Attitude has shown strong association with intention to breastfeed standardized [$\beta = .404$ at 95.0%, CI (.328, .497)] followed by perceived behavioural control [$\beta = .191$ at 95% CI (.121, .284)] which is weak. Subjective norm has also shown very weak (negligible) association [$\beta = .098$ at 95% CI (.011, .074)] with intention. There is no multicollinearity problem between predictor variables as the variance inflation factor (VIF) is less than 10 for all (Table 4).

Table 4 Shows the independent predictors of intentions among pregnant women.

Coefficients' dependant variable is intention to EBF										
Model		Unstandardized Coefficients		Stand. Coefficients	T	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
	Attitude score	.390	.042	.404	9.332	.000	.308	.472	.989	1.011
	PBCs core	.182	.042	.191	4.302	.000	.099	.265	.940	1.063
	SNscore	.092	.041	.098	2.224	.027	.011	.173	.950	1.052

Note: Attitude score, subjective norm and perceived behavioural control are independent predictors of intentions. The table is output of multiple linear regression modified to ease for summary.

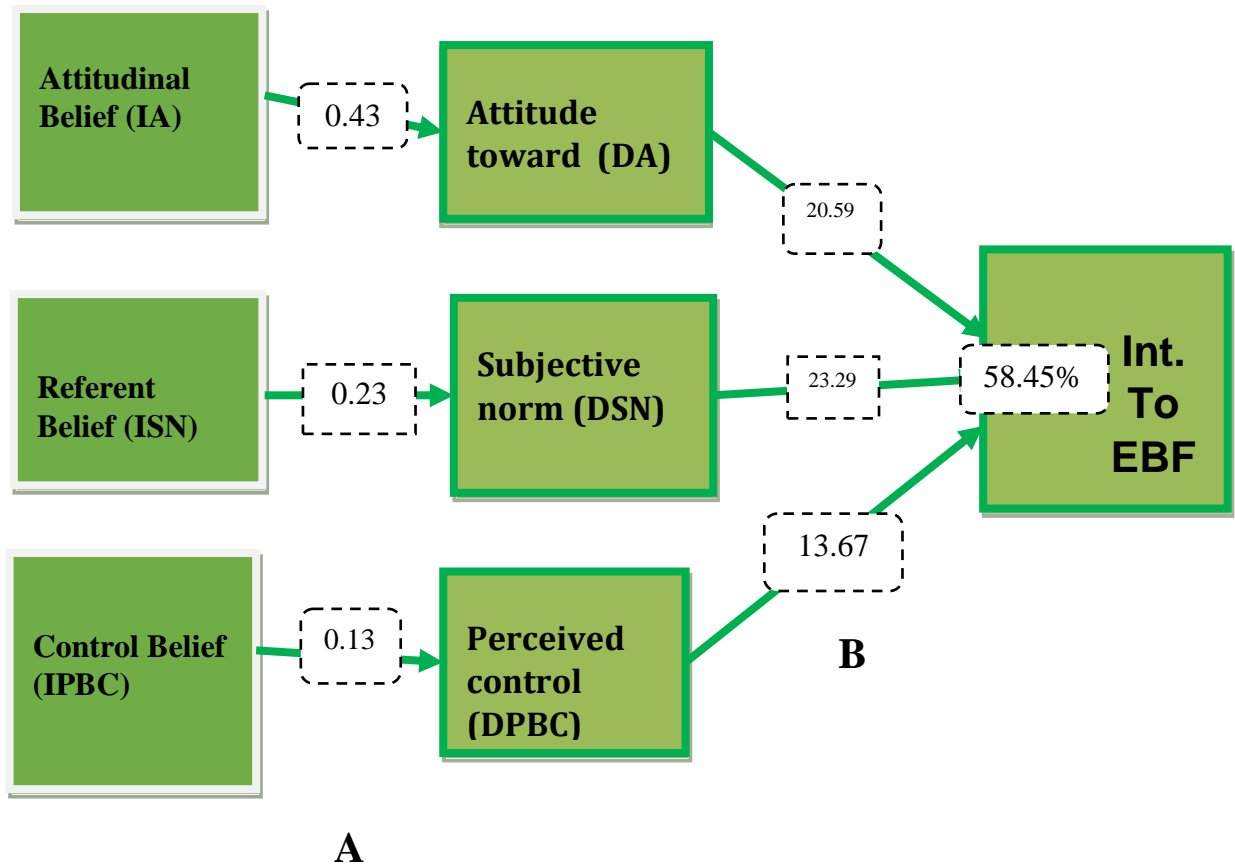


Figure 2 A) Magnitude of correlation coefficients between direct and indirect constructs
 B) Proportions of variations explained by proximal (direct) constructs of intention during factor analysis. - followed the CFW of the Theory of Planned Behaviour

Table 5 proportion of the variations in intention explained by direct predictors (constructs of TPB)

Dependent Variable: Intention score				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.427 ^a	.182	.180	.42499
2	.476 ^b	.227	.223	.41372
3	.486 ^c	.236	.230	.41176
a) Predictors: (Constant), Attitude score b) Predictors: (Constant), Attitude score, PBCscore c) Predictors: (Constant Attitude score, PBCscore , SN score				

Note: * indicates that it is below level of statistical significance

Discussion

This study has tried to validate the tool of exclusive breastfeeding using the theory of planned behaviour and thereby to test predictability of the Theory in Ethiopian context. Therefore, all items of the modal salient beliefs have demonstrated correlations. The power of the correlation ranged from strong between attitude and its beliefs ($r=.430$, $p<.000$), moderate between subjective norm and its referent belief ($r=.225$, $p<.000$) and weak between perceived behavioural control and control belief ($r=.132$, $p<.05$).

At the same time, association test was done between items of these underlying beliefs and intention. The result showed that there is association between them too. Attitude again demonstrated strong association with intention ($r=.413$, $p<.000$) followed by weighted indirect subjective norm, ($r=.274$, $p<.00$) and control belief ($r=.235$, $p<.000$) (moderate).

This finding is consistent with a cross sectional study conducted in Kenya and a study conducted in UK with only minor difference in that the correlation coefficient between the latent constructs and intention are higher in that of Kenya, may be due to difference in reliability of the items (all cronbach's alpha $>.9$) whereas it ranged between $.522$ and $.787$ in this study indicating the need for modification (3, 15).

Attempt was done to test the theory, and the finding confirmed that the theory has good predictive ability by explaining 58.45% of the variations in mother's intention to practice EBF in the study area. Even though subjective norm loaded the highest amount on intention during the factor analysis by explaining 23.29% of the variation in mother's intention to practice EBF behaviour; attitude part has shown strong association with intention during bivivariate correlation analysis as well as in the subsequent linear regression analysis. It also explained 20.59% of the variation during factor analysis in mother's intention to exclusively breastfeed among the study participants.

However, subjective norm (direct) demonstrated the weakest (negligible) relationship with its referent belief and it was also found to be insignificant independent predictor of intention in the linear regression analysis. It's being the first to explain the variance in the TPB during factor analysis, but demonstrating negligible correlation, (which is confirmed later in the subsequent regression analysis), may reflect the impact of measurement error or tool quality (cronbach's alpha of its referents belief and motivation to comply are $.530$ and $.579$, respectively which questioned the tool reliability), rather than its being the most important predictor.

This finding is also in line with study done in Malaysia where the theory explained 51.0% of the variance in women's intention to exclusively breastfeed their child and also quite similar with finding of research done in Kansas where the independent predictors of the intention accounted for the 23.0% of the variation in mothers intention to EBF in the subsequent linear regression analysis. But the percentage of variation explained by the independent predictors of intention in the regression analysis in case of Malaysia and the proportion of the variance explained by the Theory of planned behaviour in the study of Kansas was missing in the report (18, 19).

In this study, the proximal constructs of the intention (the direct independent predictors of intention) predicted 23% of the variations in intention in the subsequent regression analysis with attitude being the strongest predictor [standardized $\beta = .404$ at 95.0%, CI (.328, .497)] followed by perceived behavioural control [$\beta = .191$ at 95% CI (.121, .284)] which is weak and subjective norm also has shown a statistically significant but very weak (negligible) association [$\beta = .098$ at 95% CI (.011, .074)].

This study is similar with a cross sectional comparative study conducted in USA and UK using Theory Of Planned Behaviour except that all the three components were significant predictors of intention in USA UK studies while subjective norm was not significant predictor in this study (21, 22).

Strength of the study

The strength of the study is that it is a theory-based (Theory of planned behaviour) study as well this study is a validating tool for current and future studies to be done on this particular topic.

It may also serve as the first reference in study area and Ethiopia on TPB based EBF tool validation study as well as it may be used as one among the few reference in Africa used validated tool.

Since it is community based study it has better generalize ability than those facility based study.

Conclusion

The items are valid and have good internal consistency (reliable) in general while some items of perceived behavioural control may need modification and theory has well explained the variance in intention to exclusive breastfeeding among the study participant. Attitude is the main important predictor of the pregnant mother's intention among the respondents.

Recommendation: Studies conducted on this topic by using this model rare so this study alone may not satisfy this shortage so another study might be important. Anyone who wants to conduct study on this topic using TPB can utilize this tool.

Limitation of the study

Gestational age estimation is based on the mother's empirical report and hence it is not objectively determined – recall bias

Liker scale questions could have been more reliable if it is self-administered than interviewer-administered (but the educational status of the mothers matters).

Some of the participant may tell a character which is not their real behaviour or not their actual experience- social desirability bias

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Questionnaires

S. No	Question	Response options				
Attitude Direct (Direct attitude items)						
AD01	I expect to exclusively breastfeed my newborn for six months	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree
AD02	I want to exclusively breastfeed my newborn for six months	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree
AD03	I plan to exclusively breastfeed my newborn for six months.	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree
AD04	For me exclusively breastfeeding my newborn for six months is	1. Extremely bad	2. Quite bad	3. Neither	4. Quite good	5. Extremely good
AD05	For me exclusively breastfeeding my newborn for six months is	1. Extremely useless	2. Quite useless	3. Neither	4. Quite useful	5. Extremely Useful
AD06	For me exclusively breastfeeding my newborn for six months is	1. Extremely unpleasant	2. Quite unpleasant	3. Neither	4. Quite pleasant	5. Extremely pleasant
AD07	For me exclusively breastfeeding my newborn for six months is	1. Extremely boring	2. Quite boring	3. Neither	4. Quite Interesting	5. Extremely Interesting
AD08	Breastfeeding helps protect the baby from getting sick.	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree
AD09	Breastfeeding will help me feel close to my baby.	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree
AD10	Exclusive breastfeeding is beneficial in spacing birth.	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree
AD11	Breastfeeding is more convenient than formula feeding.	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree
AD12	Breastfeeding makes mother's breasts sag.	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree
AD13	Breastfeeding is good for mother's health.	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree
AD14	Breastfeeding alone do not provide sufficient nutrition in the first six months of life for the newborn.	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree

Indirect attitude items

A. Behavioral beliefs

BB12	Breastfeeding for six months will help my newborn to be a healthier.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
BB13	If I breastfeed my newborn for six months, it will help to protect him/her from getting certain diseases.	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree
BB14	If I breastfeed my newborn for six months, I feel that I am boosting his/her mental development	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree
BB15	If breastfeed my newborn for six months, it will help him/her to stand and go on foot quickly.	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree
BB16	Breastfeeding my newborn for six months will help me to increase birth interval.	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree
BB17	If I breastfeed my newborn for six months, I feel that I am providing him/her a food which has additional cost.	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree
BB18	Breastfeeding my newborn for six months will help him/her to grow fast.	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree
BB19	If I breastfeed my newborn for six months, it makes him/her have distended belly.	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree

B. Outcome Evaluation

OE20.	For me having a healthier newborn is	1. Extremely undesirable	2. Undesirable	3. Neither	4. Desirable	5. Extremely desirable
OE21	For me protecting my newborn from getting certain diseases is	1. Extremely undesirable	2. Undesirable	3. Neither	4. Desirable	5. Extremely desirable
OE22.	For me boosting my newborn's mental development is	1. Extremely undesirable	2. Undesirable	3. Neither	4. Desirable	5. Extremely desirable
OE23.	For me helping my newborn to stand and go on foot quickly is	1. Extremely undesirable	2. Undesirable	3. Neither	4. Desirable	5. Extremely desirable
OE24	For me increasing birth interval is	1. Extremely undesirable	2. Undesirable	3. Neither	4. Desirable	5. Extremely desirable
OE25	For me providing my newborn a food that has additional cost is	1. Extremely undesirable	2. Undesirable	3. Neither	4. Desirable	5. Extremely desirable
OE26	For me helping my newborn to grow fast is	1. Extremely undesirable	2. Undesirable	3. Neither	4. Desirable	5. Extremely desirable
OE27	For me having a newborn with distended belly is	1. Extremely undesirable	2. Undesirable	3. Neither	4. Desirable	5. Extremely desirable

OE 27 RECODED !

Subjective Norms

Direct Subjective norm items

SN01	Most people whose opinions I value would approve me if I exclusively breastfeed my newborn for six months.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SN02	Most of the mothers in my area with whom I am acquainted breastfeed their newborn for six months.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SN03	People who are important to me want me to exclusively breastfeed my newborn for six months.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SN04	Most of the mothers whom I know do not exclusively breastfeed their newborns for six months.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SN05	I am not expected to exclusively breastfeed my newborn for six months.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SN06	I feel under social pressure to exclusively breastfeed my child for six months.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

A Normative Belief Items

SN07	My husband thinks that I should exclusively breastfeed my newborn for six months.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SN08	My mother would disapprove my exclusively breastfeeding for six months.					
SN09	My neighbors do not exclusively breastfeed their babies for six months.					
SN10	My friends exclusively breastfeed their babies for six months.					
SN11	Our kebele health extension workers expects me to exclusively breastfeed my newborn for six months.					
SN12	My one-to-five group leader expects me to exclusively breastfeed my newborn for six months.					

A. Motivation to comply

MC13	When it comes to exclusive breastfeeding for six months, how much do you want to do what your husband thinks you should do?	Not at all	Not Much	Neutral	Much	Very much
MC14	My mother's approval of breastfeeding for six months is important to me.	Not at all	Not Much	Neutral	Much	Very much
MC15	When it comes to exclusive breastfeeding for six months, how much do you want to do what your neighbors do?	Not at all	Not Much	Neutral	Much	Very much
MC16	Doing what my friends do is important to me.	Not at all	Not Much	Neutral	Much	Very much
MC17	I care much about what our kebele health extension workers think I should do.	Not at all	Not Much	Neutral	Much	Very much
MC18	My one-to-five group leader's approval of my exclusive breastfeeding for 6 months is important to me.	Not at all	Not Much	Neutral	Much	Very much

Perceived Behavioral control

Direct Perceived behavioral control items

BC19	For me breastfeeding my newborn for six months is	1.Extremely easy	2.Quite easy	3. Neither	4. Quiet difficult	5. Extremely difficult
BC20	For me breastfeeding my newborn for six months is	1.Extremely Conditional	2.Quite conditional	3. Neither	4. Quiet unconditional	5. Extremely unconditional
BC21	I am confident that I will exclusively breastfeed my newborn for six months if I wanted to.	1.Strongly disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly agree
BC22	The decision to exclusively breastfeed my newborn is beyond my control.	1.Strongly disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly agree
BC23	Whether I exclusively breastfeed my newborn for six months or not is entirely up to me.	1.Strongly disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly agree
BC24	If I want to, I will not have problems in succeeding to exclusively breastfeed	1.Strongly disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly agree

my newborn for six months.					
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Indirect Perceived Behavioral control

A. Control beliefs measurement

CB25	If I do not get good emotional support from family, I cannot breastfeed my newborn for six months.	1.Strongly disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly agree
CB26	If my family takes good care of me, I will exclusively breastfeed my newborn for six months	1.Strongly disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly agree
CB27	Lack of adequate foodstuff at home would make exclusively breastfeeding my newborn for six months uncomfortable.	1.Strongly disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly agree
CB28	Support with carrying out household chores would help me to exclusively breastfeed my newborn for six months.	1.Strongly disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly agree
CB29	I expect that someone would carry out outdoor tasks for me to exclusively breastfeed my newborn for six months.	1.Strongly disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly agree

B. Power of control measurement

PC30	Having good emotional support from family would make it easier for me to exclusively breastfeed my newborn for six months.	1.Strongly disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly agree
PC31	Getting a good care from family would make exclusive breastfeeding for six months easier/difficult for me.	1.Strongly disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly agree
PC32	Lack of adequate foodstuff at home would make it much more difficult for me to exclusively breastfeed my newborn for six months	1.Strongly disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly agree
PC33	Support with carryout household chores would make exclusive breastfeeding for six months easier for me.	1.Strongly disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly agree
PC34	Absence of someone who carryout outdoor tasks for me would make exclusive breastfeeding for six months much more difficult.	1.Strongly disagree	2. Disagree	3.Neutral	4. Agree	5.Strongly agree

JIMMA UNIVERSITY
INSTITUTE OF HEALTH

DEPARTMENT OF FAMILY HEALTH AND NUTRION

Maqaan koo _____ jedhama. Yuniversitii Jimmaatti Muummee Fayya Maatii iddoo bu'een asitti argama. Qorannoo kana kanan taasisaa jirruuf barnoota maastersii fayyaa haawaasaa gosa barnootaa *Fayyaa Wal Hormaataa* jedhamu irratti hojjechaa jiru ittiin xumuruufidha.

Kaayyoon qorannoo kanaa aanaa saqqaa godina Jimmaa Kibba Lixa Itoophiyaa keessatti fedhii haadholiin ulfi hanga ji'a ja'aatti harma qofa hoosisuuf qaban adda baasuufi. Hirmaannan isin taasiftani fi deebii sirriin isin nuuf kennitan argannoo sirrii fi sadarkaa tajaajilli fayyaa keenya irra jiru mullisa.

Kun immoo caalaatti irratti hojjechuuf gargaara. Kanaafuu amanamummaadhaan akka irratti hirmaattan isin gaafanna. Hirmaannan isin asirratti taasiftan fedhii keessanirratti kan hundaa'eedha. Maqaan keessan hin barreeffamu. Odeeffannoon isin asirratti kennitan icciitidhaan kan eegamu ta'a. gaaffiin deebisuuf isinitti hin tolle yoo jiraate bira darbuu dandeessu. Hirmaannaa keessan kamiifuu galata qabna. Gaaffii isiniif hin galle akka isiniif ibsinuuf nugaafachuu dandeessu. Yeroo barbaaddanitti gaaffiif deebii kana addaan kuttanii dhiisuf mirgi keessan eegamaadha.

AD0 1	Mucaa koo hang ji'a ja'aatti harma qofa nan hoosisa jedheen yaada	1.Cimseen morma	2. Non morma	3.Hinmormus hin deeggarus	4.Nan deeggara	5. Cimseen deeggara
AD0 2	Mucaa koo hanga ji'a ja'aatti Harma qofaan hoosisuu barbaada.	1. Cimseen morma	2. Non morma	3.Hinmormus hin deeggarus	4.Nan deeggara	5. Cimseen deeggara
AD0 3	Mucaa koo hanga ji'a ja'aatti Harma qofa hoosisuuf nan karoorfadha.	1. Cimseen morma	2. Non morma	3.Hinmormus hin deeggarus	4.Nan deeggara	5. Cimseen deeggara
AD0 4	Akka kootti mucaa koo hanga ji'a ja'aatti harma qofa hoosisuun:	1.Baayyee ajaa	2.Badaa miti	3.Hin beeku	4.Gaariidha	5.Baayyee gaariidha
AD0 5	Akka kootti mucaa koo hanga ji'a ja'aatti harma qofa hoosisuun:	1.Tasuma faayidaa hin qabu	2.Faayida hin qabu	3.Hin beeku	4.Faayidaa qaba	5.Baayyee faayidaa qaba
AD0 6	Akka kootti mucaa koo hanga ji'a ja'aatti harma qofa hoosisuun:	1. Baayyee jibbisiisaa	2. Jibbisii saa	3. Hin beeku	4.Gamma chiisaadha	5. Baayyee gammachiisaadha
AD0 7	Akka kootti mucaa koo hanga ji'a ja'aatti harma qofa hoosisuun	1. Baayyee nuffisisadha	2. Nuffisiisaadha	3. Hin beeku	4. Namatti tola	5. Bayyee namattitola
AD0 8	Harma hoosisuun daa'imarraa dhukkuba ittisa	1.Cimseen morma	2.Nan morma	3. Hin mormus hin deeggarus	4.Nan deeggara	5. Cimseen deeggara
AD0 9	.Harma hoosisuun walitti dhufeenyan mucaa koo wajinn qabu cimsa.	1.Cimseen morma	2.Nan morma	3.Hin mormus hin deeggarus	4.Nan deeggara	5. Cimseen deeggara
AD1 0	Hanga ji'a ja'aatti harma qofa hoosisuun addaan butanii da'uuf nama fayyada.	1.Cimseen morma	2. Nan morma	3. Hin mormus hin deeggarus	4.Nan deeggara	5. Cimseen deeggara
AD1 1	Aannan nam - tolchee kennuurra harma hoosisuutu mijata.	1. Cimseen morma	2. Nan morma	3. hin mormus hin deeggarus	4.Nan deeggara	5. Cimseen deeggara
AD1 2	Harma hoosisuun harmi akka jigu taasisa.	1.Cimseen morma	2. Nan morma	3. Hin mormus hin deeggarus	4.Nan deeggara	5. Cimseen deeggara
AD1 3	Harma hoosisuun fayyaa haadhaatif gaariidha.	1. Cimseen morma	2. Nan morma	3. hin mormus hin deeggarus	4.Nan deeggara	5. Cimseen deeggara
AD1 4	Hanga ji'a ja'aatti harma qofa hoosisuun mucaadhaaf nyaata ga'aa hin ta'u.	1.Cimseen morma	2. Nan morma	3. hin mormus hin deeggarus	4.Nan deeggara	5. Cimseen deeggara

Indirect attitude items

A. Behavioral beliefs

BB12	Hanga ji'a ja'aatti harma qofa hoosisuun daa'imni fayyaa akka taatu gargaara.	1.Cimseen morma	2.Nan morma	3.Hin mormus hin deeggarus	4.Nandeggara	5.Cimseen deeggara
BB13	Hanga ji'a ja'aatti harma qofa hoosisuun mucaan koo dhukkubaan akka hin qabamne gargaara.	1.Cimseen morma	2.Nan morma	3.Hin mormus hin deeggarus	4.Nandeggara	5.Cimseen deeggara
BB14	Mucaa koo hanga ji'a ja'aatti harma qofa yoon hoosise, guddina sammuu mucaa kootii cimsaan jira jedheen yaada.	1.Cimseen morma	2.Nan morma	3.Hin mormus hin deeggarus	4.Nandeggara	5.Cimseen deeggara
BB15	Mucaa koo hanga ji'a ja'aatti harma qofa hoosisuun, akka isheen daftee kaatee dhaabbatttee adeemtu gargaara.	Cimseen morma	Nan morma	Hin mormus hin deeggarus	Nandeggara	Cimseen deeggara
BB16	Mucaa koo hanga ji'a ja'aatti harma qofa hoosisuun, turtii yeroo da'umsaa gidduu jiru naaf dabala.	Cimseen morma	Nan morma	hin mormus hin deeggarus	Nandeggara	Cimseen deeggara
BB17	Mucaa koo hanga ji'a ja'aatti harma qofa yoon hoosise nyaata baasii dabalataa gaafatu kennaafii akkan jirutti natti dhaga'ama.	Cimseen morma	Nan morma	hin mormus hin deeggarus	Nan deeggara	Cimseen deeggara
BB18	Mucaa koo hanga ji'a ja'aatti harma qofa hoosisuun akka daftee/tee guddatu/ttu gargaara.	Cimseen morma	Nan morma	hin mormus hin deeggarus	Nandeggara	Cimseen deeggara
BB19	Mucaa koo hanga ji'a ja'aatti harma qofa yoon hoosise garaa ishee ruurressa.	Cimseen morma	Nan morma	hin mormus hin deeggarus	Nandeggara	Cimseen deeggara

B. Outcome Evaluation

OE20.	Akka kootti mucaa fayya qabeessa qabaachuun:	1.Tasuma na hin hawwisiisu	2.Na hin hawwisiisu	3. Hin beeku.	4. Nama hawwisiisa	5. Baayyee na hawwisisa
OE21	Akka kootti daa'ima dhalattuu dhukkuba irraa ittisuu jechuun:	Tasuma na hin hawwisiisu	Nama hin hawwisiisu	. Hin beeku	4. Nan hawwisiisa	5. Baayyee na hawwisiisu
OE22.	Akka kootti guddina/dagaagina /bilchina sammuu mucaa kootii cimsuun:	1.Tasuma na hin hawwisiisu	2. Nama hin hawwisiisu	. Hin beeku	4. Nama hawwisiisa	5. Baayyee nama hawwisisa
OE23.	Akka kootti mucaan	1. Tasuma	2. Na hin	. Hin beeku	4. Na	5. Baayyee na

	koo akka si'atee dhaabbatee deemu gargaaruun:	na hin hawwisiisu	hawwisiisu		hawwisiisa	hawwisisa
OE24	Akka kootti addaan bu'anii da'uun:	Tasuma na hin hawwisiisu	Na hin hawwisiisu	3. Hin beeku	4. Na hawwisiisa	5. Baayyee na hawwisisa
OE25	Akka kootti daa'ima dhalattuudhaaf nyaata baasii dabalataa qabu kennuufin:	1. Tasuma na hin hawwisiisu	2. Na hin hawwisiisu	3. Hin beeku	4. Na hawwisiisa	5. Baayyee na hawwisisa
OE26	Akka kootti mucaan koo akka daftte guddatu gargaaruun:	Tasuma na hin hawwisiisu	2. Na hin hawwisiisu	3. Hin beeku	4. Na hawwisiisa	5Baayyee na hawwisisa
OE27	Akka kootti mucaa garaan ruurra'e qabaachuun:	1. Tasuma na hin hawwisiisu	2. Na hin hawwisiisu	3. Hin beeku	4. Na hawwisiisa	5. Baayyee na hawwisisa

Subjective Norms

Direct Subjective norm items

SN01	Yoon hamma ji'a ja'aatti mucaa koo harma qofa hoosise namootan ani yaada isaanii hordofu biratti fudhatama nan argadha.	1.Cimseen morma	2.Nan morma	3.Hinmormus hin deeggarus	4.Nan deeggara	5.Cimseen deeggara
SN02	Namootni naannoo kootii kan baayyee wal beeknu hamma ji'a ja'aatti harma qofa hoosisu.	1.Cimseen morma	2.Nan morma	3.Hin mormus hin deeggarus	4.Nan deeggara	5.Cimseen deeggara
SN03	Namootni anaaf barbaachisoo ta'an hamma ji'a ja'aatti harma qofa akkan hoosisu barbaadu	1.Cimseen morma	2.Nan morma	3.Hin mormus hin deeggarus	4.Nandee ggara	5.Cimseen deeggara
SN04	Haadholii ani beeku keessa harki caalan hanga ji'a ja'aatti harma qofa hin hoosisanu.	Cimseen morma	Nan morma	hin mormus hin deeggarus	Nandee ggara	Cimseen deeggara
SN05	.Hanga ji'a ja'aatti mucaa koo harma qofa hoosisuun narraa hin eegamu.	Cimseen morma	Nan morma	Hin mormus hin deeggarus	Nan deeggara	Cimseen deeggara
SN06	Dhiibbaan namoonni naannoo kootii narra geesisan mucaa koo hanaga ji'a ja'aatti akkan harma hin hoosifne na godha.	Cimseen morma	Nan morma	hin mormus hin deeggarus	Nandee ggara	Cimseen deeggara

Indirect Subjective norm

Normative beliefs

SN07	Abbaan manaa koo hanga ji'a ja'aatti harma qofa hoosisuu akkan qabutti yaada.	Cimsen morma	Nan morma	Hinmormus hin deeggarus	Nan deeggara	Cimseen deeggara
SN08	Haatikoo hanga ja'aatti harma qofa hoosisuu akkan qabu itti hin amantu.	Cimseen morma	Nan morma	Hin mormus hin deeggarus	Nan deeggara	Cimseen deeggara
SN09	Olloonna koo hanga ji'a ja'aatti harma qofa hin hoosisanu.	Cimseen morma	Nan morma	Hin mormus hin deeggarus	Nan deeggara	Cimseen deeggara
SN10	Hiriyoonna koo hanga ji'a ja'aatti harma qofa hoosisu.	Cimseen morma	Nan morma	Hin mormus hin deeggarus	Nan deeggara	Cimseen deeggara
SN11	Hojjettuun extension fayyaa ganda keenyaa mucaa koo hanga ji'a ja'aatti harma qofa hoosisuu akkan qabu narraa eegdi.	Cimseen morma	Nan morma	Hin mormus hin deeggarus	Nan deeggara	Cimseen deeggara
SN12	Dura buutuun tokko shanee keenyaa mucaa koo hanga ji'a ja'aatti harma qofa hoosisuu akkan qabu narraa eegdi.	Cimseen morma	Nan morma	Hin mormus hin deeggarus	Nan deeggara	Cimseen deeggara

Motivation to comply

MC13	Hanga ji'a ja'aatti harma qofa hoosisuu ilaalchisee waan abbaan manaa keetii gochuu qabda jedhee yaadu hammam hojjechuu barbaadda?	Tasumaa hin hojjedhu	Hin hojjedhu	Dhimma/Ha ajaa hin qabu	Nan hojjedhaq	Baayyen hojjedha
MC14	Hanga ji'a ja'aatti harma hoosisuu koo haati koo itti amanuun barbaachisaadha.	Tasumaa barbachisa miti	barbachi sa miti	Dhimma/Haajaa hin qabu	barbachisa dha.	Baayyen barbaach isaadha.
MC15	Hanga ji'a ja'aatti harma qofa hoosisuu ilaalchisee waan ollaan keetii gochuu qabda jedhee yaadu hammam raawwachuu barbaadda?	Tasumaa hin hojjedhu	Baayyee hin hojjedhu	Dhimma Haajaa hin qabu	Nan hojjedhaq	Baayyen hojjedha
MC16	Waan hiriyaan koo godhu gochuun anaaf barbaachisaadha.	Tasumaa Barbaachisa a miti.	Barbaach isaa miti.	Dhimma/Ha ajaa hin qabu	Barbaachis aadha.	Baayyen barbaach isaadha.
MC17	Waan hojjetuun ekisteenshinii fayyaa ganda keenyaa narraa	Waawuu/	Baayyee hin	Dhimma/	Nan	Baayyen

	eegdu irraatti baayyeen xiyyeeffadha	Tasumaa	hojjedhu	Haajaa hin qabu	hojjedhaq	hojjedha
MC18	Hanga ji'a ja'aatti harma qofa hoosisuun koo dura buutuu shanee keenyaa biratti fudhatama argachuun isaa nabarbaachisa.	Waawuu/ Tasumaa	Baayyee hin hojjedhu	Dhimma/ Haajaa hin qabu	Nan hojjedhaq	Baayyen hojjedha

Perceived Behavioral control
Direct Perceived behavioral control items

BC19	Hanga ji'a ja'aatti harma qofa hoosisuun anaaf :	1.baayyee salphaadha	2.salphaa dha	3. Salphaas rakkiisaas miti	4.Rakkisa adha	5.baayyee rakkisaadha
	Hanga ji'a ja'aatti harma qofa hoosisuun anaaf :	1.Baayyee Haalarratti hundaa'a	2.Haalarratti hundaa'a	3.Haalarratti hndaa'us dhiisus danda'a	4.Haalarratti hin hundaa'u	5.Tasumayy u haalarratti hin hundaa'u
BC20	yoona barbaade hamma ji'a ja'aatti harma qofa hoosisuu akkan danda'u ofitti nan amana.	1.Cimseen morma	2.Nan morma	3.Hin mormus hin deeggarus	4.Nandee ggara	5.Cimseen deeggara
BC21	Hanga ji'a ja'aatti harma qofa hoosisuuf murteessuun (da ndeettii) kootin ala.	Cimseen morma	Nan morma	Hin mormus hin deeggarus	Nan deeggara	5. Cimseen deeggara
BC22	Hanga ji'a ja'aatti harma qofa hoosisuu fi dhiisun dhimma ana qofa qofa ilallatuudha.	Cimseen morma	2. Nan morma	3.Hin mormus hin deeggarus	4. Nan deeggara	5.Cimseen deeggara
BC23	Hanga ji'a ja'aatti harma qofa hoosisuu yoon barbaade, akkan hin milkoofneef wanti narakkisu hin jiru.	Cimseen morma	2. Nan morma	3.Hin mormus hin deeggarus	4Nan deeggara	5.Cimseen deeggara

Indirect Perceived Behavioral control
Control beliefs measurement

CB23	Maattii koo irraa deeggarsa yoon hin arganne hanga ji'a ja'aatti harma qofa hoosisuu hin danda'u	1.Cimseen morma	2. Nan morma	3. Hin mormus hin deeggarus	4.Nan deeggara	5.Cimseen deeggara
CB24	Yoo maatiin koo na kunuunse, mucaa koo hanga ji'a ja'aatti harma qofa nan hoosisa	1.Cimseen morma	2.Nan morma	3.Hin mormus hin deeggarus	4. Nan deeggara	5.Cimseen deeggara
CB25	Nyaanni ga'aan mana keessaa dhabamuun hanga ji'a ja'aatti	1.Cimseen	2. Nan	3.Hin mormus hin	4. Nan	5.Cimseen

	harma qofa hoosisuu akka naaf hin mijanne godha.	morma	morma	deeggarus	deeggara	deeggara
CB26	Hojii mana keessaa nama na gargaaru argachuun mucaa koo hanga ji'a ja'aatti harma qofa akkan hoosisuuf nagargaara.	1. Cimseen morma	2.Nan morma	3.Hin mormus hin deeggarus	4. Nan deeggara	5.Cimseen deeggara
CB27	Mucaa koo hanga ji'a ja'aatti harma qofa hoosisuuf namni biraa hojii bakkee (alaa/dirree) naaf hojjechuu qaba	1. Cimseen morma	2.Nan morma	3.Hin mormus hin deeggarus	4. Nandeeggara	5.Cimseen deeggara

Power of control measurement

PC28	Maatii irraa deeggarsa argachuun mucaa koo hanga ji'a ja'aatti harma hoosisuun akka naaf salphatu taasisa.	1.Cimseen morma	2.Nan morma	3. Hin mormus hin deeggarus	4. Nan deeggara	5. Cimseen deeggara
PC29	Maatii irra kunuunsa gaarii argachuun mucaa koo hanga ji'a ja'aatti harma qofa hoosisuu salphaa naaf taasisa	1.Cimseen morma	2. Nan morma	3. Hin mormus hin deeggarus	4. Nan deeggara	5. Cimseen deeggara
PC30	Mana keessaa nyaanni ga'aan dhabamuun mucaa koo hanga ji'a ja'aatti harma qofa hoosisuu irratti rakkoo natti fida (akkan hin dandeenye godha)	1.Cimseen morma	2.Nan morma	3. Hin mormus hin deeggarus	4. Nan deeggara	5. Cimseen deeggara
PC31	Nama hojii mana keessaa na gargaaru argachuun akka salphaatti mucaa koo hanga ji'a ja'aatti harma qofa akkan hoosisu godha.	1.Cimseen morma	2. Nan morma	3. Hin mormus hin deeggarus	4. Nan deeggara	5.Cimseen deeggara
PC32	Nama hojii alaa (bakkee) na gargaaru dhabuun mucaa koo hanga ji'a ja'aatti harma qofa hoosisuuf akkan rakkadhu nagodha,	1.Cimseen morma	2. Nan morma	3. Hin mormus hin deeggarus	4. Nan deeggara	5.Cimseen deeggara