

Determinants of Knowledge and Attitude Towards Breastfeeding Using Validated Instruments in Pregnant Women From a Rural Setting in Ethiopia

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Research

Keywords: breastfeeding, knowledge, attitude, determinants, rural Ethiopia

Posted Date: January 11th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-141931/v1>

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Abstract

Background

Understanding the important underlying determinants of maternal knowledge and attitude towards breastfeeding guides the development of context-specific interventions aimed at increasing the rates of optimal breastfeeding practices. However, studies that used validated instruments to assess breastfeeding knowledge and attitude are nonexistent in Ethiopia.

Objective

To assess the level and determinants of breastfeeding knowledge and attitude using validated instruments in pregnant women who participated in breastfeeding education and support intervention in a rural district in Ethiopia.

Methods

468 pregnant women in their second or third trimester were interviewed at baseline to assess their knowledge and attitude towards breastfeeding practices using locally adapted and validated instruments. We used the Afan-Oromo versions of the Breastfeeding Knowledge Questionnaire (BFKQ-AO) and the Iowa Infant Feeding Attitude Scale (IIFAS-AO). Breastfeeding knowledge and attitude scores were standardized based on the distribution of the population and multiple linear regression models were fitted to identify the independent determinants knowledge and attitude.

Results

52.4% of the mothers had a high level of knowledge while 60.9% of the women had a neutral attitude towards breastfeeding. In a multiple linear regression model, the maternal occupation was the only predictor of the overall BFKQ-AO score (0.56 SD; 95% CI, 1.28, 4.59 SD; $P=0.009$). Age (0.57 SD; 95% CI, 0.24, 0.90 SD; $P=0.001$), parity (-0.24 SD; 95%CI, -0.47, -0.02SD; $P=0.034$), antenatal care visits (0.41 SD; 95% CI, (0.07, 0.74 SD; $P=0.017$) and the BFKQ score (0.08 SD; 95% CI, 0.06, 0.09 SD; $P<0.000$) were predictors of the IIFAS-AO score.

Conclusions

Although more than half of the respondents had adequate knowledge about breastfeeding, most women had a neutral attitude towards breastfeeding. Occupation of mothers was an independent predictor of breastfeeding knowledge, whereas age, parity, antenatal care visits, and breastfeeding knowledge score were predictors of breastfeeding attitude. Thus, policymakers and managers should address these factors when planning educational interventions on breastfeeding to improve knowledge and attitude thereby improving breastfeeding practices.

Background

Exclusive breastfeeding (EBF) of infants during the first six months of life is recommended [1], given the several benefits identified for both mother and infant [2–12]. Despite the presence of global recommendations, the practice of EBF substantially lagged behind the level recommended by the World Health Organization, especially in lower and middle-income countries where the burden of suboptimal infant feeding is high [13]. In Ethiopia, early initiation of breastfeeding is 78% while 58% of children under 6 months old are exclusively breastfed [14]. Although the current rate of early initiation and EBF are high compared to the global rate, both are below the 2020 national target of the Ethiopian Health Sector Transformation Plan of 90% and 72%, respectively [15]. Moreover, after birth, the EBF-rate declines rapidly from 74% between 0–1 month to 36% at 4–5 months [14]. So although the rate of EBF increased from 55% in 2000 to 60% in 2016, this increase was neither substantial, nor it is within reach of the Health Sector Transformation Plan target plan.

Large studies undertaken to estimate the prevalence and determinants of EBF practice have identified different socio-demographic and psychosocial factors such as mother's knowledge and attitude [16–18]. For example, positive maternal attitude and good knowledge are pivotal in the process of breastfeeding and regarded as modifiable variables when aimed to improve breastfeeding practices. In turn, other studies have reported that knowledge about the benefits of breastfeeding is significantly associated with breastfeeding attitude; positive maternal attitude toward breastfeeding is a strong predictor of breastfeeding initiation and longer duration than sociodemographic factors [19–25]. In Ethiopia, several studies were conducted to assess knowledge and attitude towards breastfeeding as factors that influenced breastfeeding practice. Yet all the available studies have used non-validated tools and ended up with varied factors across different settings [26–28].

Understanding the predictors of maternal knowledge and attitudes toward breastfeeding through validated instrument guides the development and implementation of public health policy and is likely to improve the evaluation of interventions aimed at increasing rates of breastfeeding. Such studies have the potential to identify the reasons why breastfeeding was discontinued among women in the first six months of their child's life. However, there is a dearth of local data on a range of factors known to influence the mother's knowledge and attitude towards breastfeeding in Ethiopia using validated instruments.

With the aim to improve breastfeeding knowledge, attitude and practices in Manna district, Southwest Ethiopia we conducted a randomized controlled trial in which we provided pregnant women with a breastfeeding education and support intervention (BFESI) that included prenatal breastfeeding education and the provision of postnatal peer support [29]. As one of the aims of the research project was to assess change in the level of knowledge and attitude towards breastfeeding, we sought to measure the baseline level and identify predictors of knowledge and attitude towards breastfeeding among women who enrolled into the BFESI trial. This investigation will be the heralded event comprehensively exposing the predictors of knowledge and attitude towards breastfeeding in an Ethiopian context.

Methods

Setting and Participants

This cross-sectional study used data collected between May and August 2017 from the baseline survey of the BFESI, which has previously been reported [29]. The study was conducted in Mana district, the smallest district in Jimma zone, located approximately 30-40 Km from Jimma town. Agriculture is the main form of livelihood in the study community with coffee accounting for 80% of the main crops produced in the area. It is the most densely populated district in the zone with 308 persons per Km². The actual population is estimated at 132,358.

We recruited 468 pregnant women using the Ethiopian community health system, Health Extension Workers antenatal logbook and Women Development Army leaders, to identify the pregnant women. Participants comprised of healthy, pregnant women in their 2nd or 3rd trimester, without severe health complications including any psychiatric illness, who provided consent to participate in the trial and no plan to leave the study area before completion of the BFESI trial. The study protocol was approved by the Institutional Review Boards of Jimma University, and the ethical review board of Oromia Regional Health Bureau. We obtained written consent from eligible participants after providing an information session detailing the study, voluntary participation, and study withdrawal options.

Data collection

Ten nurses who were fluent in the local language were trained for 2 days carried out data collection. Data were collected through a structured face-to-face interview after obtaining written consent from study participants. Maternal knowledge and attitude towards breastfeeding were assessed using the Afan Oromo versions of the Breastfeeding Knowledge Questionnaire (BFKQ-AO) and the IOWA Infant Feeding Attitude Scale (IIFAS-AO), which have been locally adapted and validated in the same population [30]. The BFKQ-AO consists of 34 items asking about various optimal breastfeeding practices, with responses coded as correct or incorrect. We used a cut-off of \geq or $<$ the median to categorize knowledge level as the breastfeeding knowledge questionnaire we adopted from Malaysia does not have a cut-off point for an optimal knowledge level. Accordingly, all mothers who scored \geq the median in the knowledge test were considered as having a high level of knowledge and those scoring below the median were considered as having a low level of knowledge. The IIFAS-AO consists of 17 items, with a 5-point Likert scale, rating maternal attitude towards breastfeeding, and total possible scores range from 17 to 85 with a higher score reflecting positive attitude. Attitude toward breastfeeding was categorized into three as follows: 1) positive to breastfeeding (IIFAS score 70–85), 2) neutral (IIFAS score 49–69), and 3) positive to formula feeding (IIFAS score 17–48) [31]. Furthermore, data on potential determinants of knowledge and attitude have been gathered such as sociodemographic factors, including maternal age, level of education, number of children, household wealth and food security status, and maternal factors, including parity, ANC visits, past obstetric and breastfeeding history.

Statistical analysis

Double data entry was performed using EpiData (version 3.1) and all statistical analyses were done using Stata version 13.1 (StataCorp LLC: College Station, TX, USA). Data were summarized using frequencies and percentages. In the first stage of the analysis, we evaluated bivariate associations between potential predictors and the study outcomes breastfeeding knowledge and attitude score to determine candidate predictors for the subsequent multiple linear regression models. In the second stage, based on the result of bivariate association, we fitted multiple linear regression models assessing the independent predictors of breastfeeding knowledge and attitude scores. We applied a robust variance estimation to take into account clustering of subjects by study sub-districts. Knowledge and attitude scores were standardized based on the distribution of our data and thus, results are expressed as standardized regression coefficients and 95% CIs. Models were evaluated for potential multi-collinearity problems using the variance inflation factor with values less than ten considered acceptable and model goodness of fit was assessed using adjusted R^2 values. All tests were two-tailed, and statistically significant association was considered at a p-value <0.05.

Results

The characteristics of 468 pregnant women are presented in Table 1. Most women were in the age group of 20–34 (83.3%), illiterate (74.6%), housewives/farmers (93.8%), and lived in a food-insecure household (58.9%). Three hundred and eighty-two (81.6%) of the enrolled women were multiparous of which 96.8% had a history of breastfeeding. The majority (88%) of the women had at least one ANC visit, but only 7.28% of them had ≥ 4 antenatal care visits (Table 1).

Table 1
Characteristics of participants (N = 468).

Variable	No (%)
Age	
15–19	50 (10.68)
20–34	390 (83.33)
≥ 35	28 (5.98)
Educational status	
Illiterate	349 (74.6)
Primary school	90 (19.2)
Secondary school	29 (6.2)
Wealth tertiles	
Lowest	156 (33.33)
Middle	156 (33.33)
Highest	156 (33.33)
Maternal occupation	
Housewife/Farmer	439 (93.80)
Parity	
Multiparous	382 (81.6)
Household food security status	
Food insecure	276 (58.97)
History of breastfeeding	
Yes	370 (96.8)
Number of ANC visit	
No ANC visit	56 (12.0)
< 4 visits	382 (81.6)
≥ 4 visits	30 (6.40)
The numbers in the table indicate frequency (%).	
*Government employee, merchant. ANC: Antenatal Care	

Two hundred forty-five (52.4%) of the mothers had a high level of knowledge while 223 (47.6%) had a low level of knowledge. From the variables included in the multiple linear regression model, i.e, age, education, employment, wealth tertile, number of children, and ANC visit,, only maternal occupation significantly predicted breastfeeding knowledge score (Table 2). Compared to mothers who were housewives, mothers involved in small trades and private employment had significantly high level of breastfeeding knowledge score (β : 0.56 SD; 95% CI, 0.14, 0.97 SD; $P = 0.009$). The mean \pm SD overall IIFAS score in our sample was 65.7 ± 7.6 points with range between 36 and 85 points. The majority (60.9%) of the women had a neutral attitude towards breastfeeding whereas 36.9% of the participants had strongly positive attitudes toward breastfeeding. The variables that independently predicted maternal attitude towards breastfeeding included maternal age, education, employment and parity, household wealth status, and ANC visit (Table 3). Older mothers as compared to their younger counter parts (< 20 years) (β : 0.57 SD; 95% CI, 0.24, 0.90 SD; $P = 0.001$), and primiparous women as compared to multiparous (β : -0.24 SD; 95%CI, -0.47, -0.02SD; $P = 0.034$) had a significantly higher IIFAS score. Women who attended at least four ANC visits were found to have a significantly higher attitude towards breastfeeding than those who had no ANC visit (β : 0.41 SD; 95% CI, (0.07, 0.74 SD; $P = 0.017$). we also found a statistically significant positive association between maternal BFKQ-AO and IIFAS scores (β : 0.33 SD; 95% CI, 0.25, 0.41 SD; $P < 0.000$).

Table 2

Predictors of BFKQ score among pregnant mothers in their second or third trimester (N = 468).

Variable	Unadjusted β (95% CI)	P-value	Adjusted β (95% CI)	P-value
Age				
15–19	Ref		Ref	
20–34	0.16 (-0.18, 0.49.3)	0.367	-0.19 (-0.76, 0.38)	0.514
≥ 35	0.26 (-0.23, 0.75.3)	0.291	-0.11 (-0.78, 0.56)	0.753
Educational status				
Illiterate	Ref		Ref	
Primary school	-0.13 (-0.39, 0.13)	0.335	-0.13 (-0.42, 0.16)	0.389
Secondary school	-0.00 (-0.44, 0.43)	0.987	-0.03 (-0.58, 0.52)	0.903
Maternal occupation				
Housewife/Farmer	Ref		Ref	
Other	0.68 (0.31, 1.06)	$< 0.000^{\dagger}$	0.56 (0.14, 0.97)	0.009*
Wealth tertiles				
Lowest	Ref		Ref	
Middle	-0.19 (-0.44, 0.05)	0.114	-0.05 (-0.33, 0.22)	0.689
Highest	-0.01 (-0.22 0.19)	0.932	-0.07 (-0.34, 0.19)	0.571
Parity				
Primiparous	Ref		Ref	
Multiparous	0.19 (-0.06, 0.45)	0.139	0.69 (-0.49, 1.88)	0.252
ANC visit				
No ANC visit	Ref		Ref	
< 4 visits	-0.12 (-0.35, 0.11)	0.324	-0.03 (-0.29, 0.23)	0.813
≥ 4 visits	0.18 (-0.26, 0.62)	0.386	0.33 (-0.18, 0.85)	0.203
$\dagger p < 0.01$, significant values				
* $p < 0.05$, significant values				

Data are given as regression coefficients (β) and 95% confidence interval. R² is 0.05.

BFKQ: Breastfeeding knowledge questionnaire, ANC: Antenatal Care

Table 3

Predictors of IIFAS score among pregnant mothers in their second or third trimester (N = 468).

Variable	Unadjusted β (95% CI)	P-value	Adjusted β (95% CI)	P-value
Age				
15–19	Ref		Ref	
20–34	0.47 (0.18, 0.77)	0.002*	0.58 (0.25, 0.90)	0.001*
≥ 35	0.46 (-0.06, 0.98)	0.083	0.56 (-0.02, 1.13)	0.060
Educational status				
Illiterate	Ref		Ref	
Primary school	-0.16 (-0.41, 0.09)	0.207	-0.09 (-0.32, 0.14)	0.433
Secondary school	-0.00 (-0.37, 0.37)	0.994	0.05 (-0.33, 0.42)	0.813
Maternal occupation				
Housewife/Farmer	Ref		Ref	
Other	0.08 (-0.31, 0.46)	0.702	-0.09 (-0.46, 0.26)	0.593
Wealth tertiles				
Lowest	Ref		Ref	
Middle	0.08 (-0.14, 0.30)	0.478	0.14 (-0.08, 0.35)	0.217
Highest	0.15 (-0.08, 0.38)	0.206	0.15 (-0.08, 0.37)	0.203
Parity				
Primiparous	Ref		Ref	
Multiparous	0.03 (-0.18, 0.25)	0.778	-0.25 (-0.48, -0.03)	0.027*
ANC visit				
No ANC visit	Ref		Ref	
< 4 visits	0.12 (-0.17, 0.40)	0.430	0.16 (-0.11, 0.43)	0.238
≥ 4 visits	0.49 (0.12, 0.87)	0.009*	0.41 (0.08, 0.75)	0.017*
BFKQ score	0.33 (0.25, 0.41)	< 0.000[†]	0.33 (0.25, 0.41)	< 0.000[†]
†p < 0.01, significant values				
*p < 0.05, significant values				

Data are given as regression coefficients (β) and 95% confidence interval. R² is 0.15.

BFKQ: Breastfeeding knowledge questionnaire, IIFAS: Iowa Infant Feeding Attitude Scale, ANC: Antenatal Care

Discussion

Breastfeeding is a choice made by all mothers, and this is highly affected by various factors including knowledge about and attitudes towards the benefits of breastfeeding. Despite Ethiopia attempts at increasing the rate of early initiation and duration of exclusive breastfeeding, the success is minimal. To the best of our knowledge, this is the first study assessing predictors of knowledge and attitude towards breastfeeding using validated instruments in Ethiopia. This community-based study revealed that half of the women had adequate knowledge about and the majority of the women had a neutral attitude toward breastfeeding. We also found that knowledge was associated only with maternal occupation while the women's attitude towards breastfeeding was associated with maternal age, parity, antenatal care visits and BFKQ-AO score.

In the present study, we found that half of the respondents had an adequate level of knowledge about breastfeeding. However, the presence of nearly half of women with a low level of knowledge demonstrates the importance of interventions that aim at improving the knowledge may be important in efforts to encourage women to breastfeed their child, and ultimately achieve the target set in the national health sector plan. Particularly, aspects of knowledge questions that scored lower percentage such as colostrum, breastmilk expression, the problem with breastfeeding and breast engorgement need emphasis during breastfeeding promotion.

Positive attitude toward breastfeeding is a strong predictor of breastfeeding initiation and duration than sociodemographic factors [19–25]. In this study, the mean IIFAS score was in a neutral attitude towards breastfeeding range [22]. The findings from the current study corroborate similar findings in the literature. Similar to the current study, a neutral attitude towards breastfeeding was reported across a diverse group of countries, China and Australia [16], Spain [32], Canada [33], Australia [34], Japan [35], and Scotland [20, 36]. Interestingly, most of these studies took place in Europe, and might not be comparable to our setting. However, it is possible that the finding of a neutral attitude could be one of the major reasons for a lower level of EBF in Ethiopia.

In the present study, women who were employed or merchants had higher knowledge about breastfeeding. This finding is similar to a study in China [17] reporting greater knowledge about breastfeeding among employed women. This is expected since maternal employment has been associated with education and those who are employed may be educated and thus have good knowledge about breastfeeding.

Earlier studies have shown that attitudes have been the focus of research because it is assumed that it always influence behavior; therefore, knowing something about a person's attitude can help us predict behavior in many contexts [37]. In this study, we found that younger women had higher attitude scores. In contrast, previous studies in China [16], Taiwan [38], Singapore [39], and Romania [40] showed that older

mothers had more positive attitudes toward breastfeeding. The direct relation between higher IIFAS score (positive attitude) with increased age is likely linked to improved experience with breastfeeding. Breastfeeding is also in many aspects a learned behavior.

Maternal education is associated with favorable attitudes toward breastfeeding as highly educated women were more aware of breastfeeding benefits that help them develop a positive attitude. Though statistically not significant in the current study mothers who attended primary school had lower attitude score. Nevertheless, previous studies have shown that higher IIFAS-S scores were positively associated with a higher educational level in Lebanon [41], Ireland [42], China [17], Singapore [39] and Spain [32].

Studies report mixed results regarding the association between IIFAS score and occupation. A study from Ireland found that full or part-time employed mothers had more positive attitudes toward breastfeeding compared to housewives [42], while a study among Chinese women reported no significant difference between infant feeding attitudes and working status [16]. However, in our study, we found that employed or merchant mothers had more negative attitudes toward breastfeeding than housewives, but the difference was statistically not significant. It is conceivable that women who work may suffer from lack of time, fatigue, and experience breastfeeding as exhaustive leading to negative attitudes towards breastfeeding.

Higher maternal IIFAS score has been found by several other studies to be associated with higher family annual income in Lebanon [41], Taiwan [38], Singapore [39], Ireland [42] Spain [32]. In this study, we estimated household assets to generate a household asset score/wealth index since household income does not measure the value of non-monetary items, particularly in a low-income context. Nevertheless, we did not find that the IIFAS score was associated with the socio-economic status of the household in our setting.

Multiparous women are expected to have a positive attitude towards breastfeeding due to their prior experience, maternal confidence and ability to solve feeding problems. However, unlike findings from the Infant Feeding Survey where multiparous women had more favourable attitudes to breastfeeding [17], multiparous women in the current study had more negative attitudes towards breastfeeding. One can speculate that Ethiopian women with many children are taxed by household chores and limited time to breastfeed leading to negative attitudes. On the other hand, mothers with fewer children have more time and are more concerned with their newborn.

Pregnant women with ≥ 4 antenatal care visits had higher IIFAS scores. A possible explanation might be that these women had increased exposure to prenatal breastfeeding education/counselling. Moreover, our respondents with high levels of breastfeeding knowledge also had a higher attitude score, in line with a finding from Finland [43]. This suggests that those mothers who have knowledge about breastfeeding also have a positive attitude.

This study has some limitations. Firstly, this is a cross-sectional study in design and thus we cannot establish causal relationships. Our findings are associations that may, or may not reflect cause and

effect. Secondly, the majority of our participants had limited schooling, reducing the ability to detect a potentially statistically significant association between knowledge and attitude towards breastfeeding and educational status. The women in this study were homogeneous demographically and the findings may not be applicable across different regions of the country. Additional research is needed to assess the relationship between IIFAS and BFKQ and breastfeeding initiation and duration in urban Ethiopian settings.

Conclusions

We found that half of the respondents had adequate knowledge about breastfeeding; the majority of women had a neutral attitude towards breastfeeding. Occupation of the women was identified as an independent predictor of breastfeeding knowledge whereas age, antenatal care visit and BFKQ score were predictors of breastfeeding attitude. Thus, policymakers and managers should address these factors when planning educational interventions on breastfeeding to improve knowledge and attitude thereby improving breastfeeding practices in rural communities.

Abbreviations

BFESI: Breastfeeding Education and Support Intervention; BFKQ: Breastfeeding Knowledge Questionnaire; EBF: Exclusive breastfeeding; IIFAS: Iowa Infant Feeding Attitudes Scale; ANC: Antenatal Care

Declarations

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

The study protocol was approved by the Institutional Review Boards of the University of Oslo and Jimma University, and the ethical review board of Oromia Regional Health Bureau. Written consent of participation was obtained from eligible participants after they were provided with an information sheet.

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding

This publication was supported by NORAD (Norwegian Agency for Development Cooperation) under the NORHED-Program, Agreement no. ETH-13/0024.

Authors' contributions

MAA, JHM and AF designed the research study. MAA performed the research. MAA and AA analysed the data and drafted the paper. All authors read and approved the final manuscript.

Acknowledgements

The authors would like to thank all the research participants who took part in the study.

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