RESEARCH ARTICLE

Knowledge and practices about breastfeeding in rural areas of Rajshahi District, Bangladesh: A cross-sectional study [version 1; peer review: 2 approved with reservations, 1 not approved]

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V1 First published: 11 Nov 2019, 8:1903
<https://doi.org/10.12688/f1000research.20148.1>
 Latest published: 11 Nov 2019, 8:1903
<https://doi.org/10.12688/f1000research.20148.1>

Abstract

Background: Breastfeeding is an important indicator for child health and mortality. The aim of this study was to determine the level of knowledge and practices regarding EBF and its relation to various socio-economic and demographic factors among mothers with at least one child age (6-12 years) in the rural areas of the Rajshahi district in Bangladesh.

Methods: A study based at village hospitals was conducted and a semi-structured questionnaire was used. A total of 513 mothers who had at least one child's age (6-12) months from 32 different village hospitals in rural areas of the Rajshahi District, Bangladesh from September to December 2015. The composite index, chi-square test and binary logistic regression model were used in this study.

Results: The incidence of EBF good knowledge and practices was 32.0% and 27.9% among mothers with at least one child age (6-12) months. The analysis shows that the age of mothers ≥ 31 years have less knowledge and practice about EBF compared to mothers aged ≤ 30 years. Mothers who are housewives had a higher probability of good knowledge and practice than mothers who were service providers. Nursing mothers at home have less knowledge and practices about EBF than mothers who gave birth in the hospital. Mothers that had a monthly family income of ≤ 6699 BDT had less knowledge and practices about EBF compared to mothers with a family income of >6699 BDT.

Conclusions: This study showed a huge gap in EBF knowledge and practices among mothers who have at least one child age (6-12) months. This study suggests that EBF education and interventions can play an important role in increasing EBF good knowledge and practices among mothers with at least one-to-one (6-12) months of age children. Malnutrition will be reduced if the EBF is widely

Open Peer Review

Approval Status ? X ?

	1	2	3
version 1	?	X	?
11 Nov 2019	view	view	view
1. Felix Emeka Anyiam , University of Port Harcourt, Port Harcourt, Nigeria			
2. Kishwar Azad , Diabetic Association of Bangladesh, Dhaka, Bangladesh Ibrahim Medical College, Dhaka, Bangladesh			
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Any reports and responses or comments on the article can be found at the end of the article.

established in Bangladesh.

Keywords

Exclusive Breastfeeding, Knowledge and Practice, Composite Index, Chi-square Test, Binary Logistic Regression.

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Author roles: **Mat Min R:** Writing – Original Draft Preparation, Writing – Review & Editing; **Hossain MM:** Data Curation, Formal Analysis, Methodology, Writing – Original Draft Preparation, Writing – Review & Editing

Competing interests: No competing interests were disclosed.

Grant information: The author(s) declared that no grants were involved in supporting this work.

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How to cite this article: Mat Min R and Hossain MM. **Knowledge and practices about breastfeeding in rural areas of Rajshahi District, Bangladesh: A cross-sectional study [version 1; peer review: 2 approved with reservations, 1 not approved]**
F1000Research 2019, 8:1903 <https://doi.org/10.12688/f1000research.20148.1>

First published: 11 Nov 2019, 8:1903 <https://doi.org/10.12688/f1000research.20148.1>

Introduction

Exclusive breastfeeding (EBF) is one of the best nutrition practices for child health, growth and nutrition and is an optimal strategy for feeding newborn and young infants¹. According to WHO and UNICEF, EBF should start within less than one hour of delivery and should continue for up to 6 months of infants' age as it is the only diet and source of fluids for babies at that age².

Children, especially new born babies, are in high danger of malnutrition during the first six months of life when breast milk alone is necessary to meet all nutritious supplies and breastfeeding needs to continue during this time³. Good practice of EBF can prevent 13.8% and 11.6% of all deaths among infants aged <2 years and those under 5-years, respectively⁴; however, a report estimated that in 2012 only 35% of infants were exclusively breastfed globally⁵. EBF, due to its various recognized health welfare for babies, children and their mothers, is a crucial plan to improve public health⁶. Low breastfeeding rates have been found in Canada, as well as other industrialized countries⁷, and EBF for at least 6 months is not a general practice in developed nations, and is even less in developing nations⁸. Usually infant development is measured by nutritional level⁹.

Nearly all Bangladeshi children are breastfed to some extent in the first year of life and many mothers continue to breastfeed up to the second year of a baby's life (91%)¹⁰. Bangladesh has the highest prevalence of malnourishment in South East Asia with a high percentage of children aged 59 months being underweight¹⁰. To determine knowledge and practices of newborn nourishment is imperative¹¹.

Several studies have been performed to assess the knowledge, perception and practices of breastfeeding among women and to assess the global trends of EBF^{12,13}. For instance, previous studies have been conducted in Nigeria about knowledge, attitude and techniques of breastfeeding mothers of under five children^{14,15}. In Ethiopia, special concern has been paid to the association between schoolgirls' perception and knowledge about breastfeeding, and knowledge and practice of mothers towards EBF¹⁶.

Only a few studies have been carried out on EBF, and most of these studies were carried out in developing countries^{17,18}. Furthermore, methodological concerns associated with the measurement of knowledge and practices about EBF have not been adequately addressed in earlier studies. The difficulty of judging knowledge lies in its multidimensional aspects; most of studies have been focused on a few indicators. To the best of our knowledge, in Bangladesh this type of study has not been conducted. Therefore, the aim of the present study was to assess the knowledge and practices of EBF among mothers who have at least one child aged 6–12 months in Rajshahi District, Bangladesh.

Methods

Study design

A village hospital based study was conducted in the rural area of Rajshahi district, Bangladesh. There are several reasons why we selected mothers who have at least one child aged 6–12 months from different village hospitals in Rajshahi district. Firstly, to the best of our knowledge in this area no studies have been conducted on EBF; secondly, this area is situated in the remote areas of Rajshahi¹⁹. Most of the sample population included all participants that were living near different village hospitals in Rajshahi district, Bangladesh.

Simple size determination

The following formula has been used for calculating sample size: $n = N / (1 + Nd^2)$, where n = required sample size, N = population size (5,123), d = marginal error (0.05)²⁰. The formula provided that the minimum sample size was estimated to be 366 for this study. For a better result, we collected data from 513 participants.

Participants

Before sampling, lists of children aged 6–12 months were gathered from the Charchat upazila (sub-district) Health Complex, Rajshahi, from lists used in expanded programmes on immunization. A two-stage purposive sampling approach was chosen to enrol mothers that have at least one child aged 6–12 months from Rajshahi district. In the first stage, out of nine upazila of Rajshahi District, one upazila was purposively selected. In the second stage, purposive sampling was used for the selected sample size. The inclusion criteria of the participants was mothers who have at one child aged 6–12 months and those with no psychological disorders. Exclusion criteria was male parents. The participants asked to be interviewed during routine check-ups. The interviews took place at the participants homes.

Data collection

From September to December 2015, we collected the following data from the mothers for the study: (i) socio-demographic characteristics and (ii) knowledge about EBF using a semi-structured questionnaire by face-to-face interviews from the villages in Rajshahi District. The survey questionnaires were drafted in Bangla, the national and mother tongue of Bangladesh and was then for research purpose translated into English (*Extended data*). Five fully trained and experienced enumerators conducted the interviews.

Outcomes variables

The dependent variable in our study is the level of good knowledge about EBF, which was calculated through nine different questions, namely: i) Do you know what is meant by EBF?; ii) Do you know when EBF should be started?; iii) Do you know when supplementary feeding is needed?; iv) Do you know if water is allowed in the EBF period?; v) Do you know if honey is allowed in EBF period?; vi) Do you know

what the appropriate duration of EBF is?; vii) Do you know what the benefits of EBF are?; viii) Do you know what happens if EBF is not done?; ix) Do you know if any additional feed is essential during the EBF period?

Other outcome variables in this study were good practices about EBF, which was measured through two different questions, namely: i) Did you feed anything else to your last baby during EBF?; ii) What type of feed did you allow during your EBF period for your last baby?

The respondent's knowledge and practice were scored using a system adopted from earlier studies. A correct reply was given 1 point, while incorrect replies received 0 points [34].

Independent variables

Socio-economic and demographic factors were included as independent variables. Age was classified into two groups: ≤ 30 years and ≥ 31 years. Place of delivery was divided into two groups (hospital and home) and occupation was classified into two groups (housewife and service holder). Education was classified based on the formal learning system in Bangladesh: Illiterate and literate. Size of family was categorized as joint (both parents) or single family. Respondent's monthly income was categorized as yes or no to the question: do you earn $\leq 6,999$ Bangladeshi Taka (BDT)? – ($\leq 6,999$ BDT = yes; $\geq 7,000$ BDT = no).

Statistical analyses

Statistical Package for Social Science (SPSS) version 22 IBM was used to analyse the data. Descriptive analyses were conducted to ascertain the socio-economic and demographic variables, and the good knowledge and practice scores. Demographic differences regarding good knowledge and practices of EBF were assessed by χ^2 analysis significance, and all analyses was set at $p < 0.05$. Completely adjusted models were used to analyse each binary outcome variable. All variables were inputted into binary logistics regression models. The adjusted odds ratio (AOR) was observed to assess the strength of the associations, and 95% confidence intervals (Cis) for significance test were used.

The knowledge index was calculated through the sums of binary input variables, where the highest and lowest values were selected for each underlying pointer. To determine the knowledge pertaining to breastfeeding, ten questions about the knowledge of breastfeeding were provided. The question was answered CORRECT or INCORRECT. A score of 1 was given for a correct answer and 0 for the incorrect answer. The scores varied from 0–9 points and were classified into two levels, as follows: Bloom's cut off point, 60%–80%. The items were all assessed using a zero-one indicator (dummy variables). These variables were given a value of zero (low knowledge less than 6 points) for 'No' (Bloom's cut off point less than 59%), and a value of one (high knowledge more than or equal to 6 points) for 'Yes' (Bloom's cut off point 60% – 80% or high). The enactment of individually pointer was articulated

using a unit-free index between 0 and 1 in accordance with the structure technique of the Human Development Index²¹.

Knowledge index = (Actual value - Minimum value) / (Maximum value - Minimum value)

The scores were categorized as the following groups [35, 36]: knowledge - poor = 0–2, moderate = 3–4, and good = 5–9; practice - poor = 0–<1, and good = ≥ 1 .

Ethics approval and consent to participate

This study was approved by the Department of Population Science and HRD, University of Rajshahi, Bangladesh (Ref: 2658/89, Date: 22/12/2014). Written informed consent was obtained from participants before data collection.

Results

A total of 513 mothers were involved in this study. From the total sample population, approximately 61% were ≤ 30 years of age, 60% of deliveries were at hospital and 61% respondents were housewives. Regarding education, 27.5% were illiterate, 19.1% were primary educated and the remaining 53.4% had secondary or higher level of education. A total of 79.5% were from a joint family, and a major portion of respondent's (59.8 %) had a monthly family income $< 6,999$ BDT.

There was a good level of knowledge and practice of EBF among the mothers that participated in this study. Table 1 and Table 2 show the socio-economic and demographic factors associated with good knowledge and practice. From the total sample population, 32% mothers had a good level of knowledge and 27.9% mothers had a good level of practice about EBF, which was statistically significant ($p < 0.05$) for all variables apart from education.

Regression analysis of the factors associated with good knowledge and practices among mothers on EBF showed (Table 3) that mothers aged ≤ 30 years (adjusted odds ratio (AOR) = 0.040; 95% CI: 0.021–0.079), gave birth in a hospital (AOR = 0.039; 95% CI: 0.017–0.095) and had a $\leq 6,999$ BDT monthly family income (AOR = 0.197; 95% CI: 0.088–0.442) were less likely to have good knowledge of EBF compared to their counterparts ($p < 0.05$). Mothers that were housewives (AOR = 21.352; 95% CI: 5.170–88.174) and had joint families (AOR = 27.445; 95% CI: 11.494–65.537) were more likely to have good knowledge of EBF compared to their counterparts ($p < 0.05$).

In Table 4, Mothers aged ≤ 30 years (AOR = 0.084; 95% CI: 0.050–0.143), gave birth at home (AOR = 0.208; 95% CI: 0.111–0.389), had a $\leq 6,999$ BDT monthly family income (AOR = 0.092; 95% CI: 0.050–0.168), and had a joint family (AOR = 0.024; 95% CI: 0.010–0.057) were less likely to have good practice of EBF compared to their counterparts ($p < 0.05$). Mothers that were housewives (AOR = 9.992; 95% CI: 4.485–22.260) were more likely to have good practice of EBF compared with their counterparts ($p < 0.05$).

Table 1. Socio-economic and demographic variables associated with knowledge of exclusive breastfeeding among mothers in Bangladesh with at least one child aged 6–12 months.

Characteristics [N (%)]	Knowledge on exclusive breastfeeding N (%)			P-value
	Poor [153 (29.8)]	Moderate [196 (38.2)]	Good [164 (32.0)]	
Age (years)				0.001
≤30 [314 (61.3)]	41 (8.0)	123 (24.0)	150 (29.3)	
≥31 [199 (38.7)]	112 (21.8)	73 (14.2)	14 (2.7)	
Place of delivery				0.001
Hospital [309 (60.2)]	117 (22.8)	106 (20.7)	86 (16.8)	
Home [204 (39.8)]	36 (7.1)	90 (17.5)	78 (15.2)	
Occupation				0.001
Housewife [315 (61.4)]	53 (10.3)	165 (32.2)	97 (18.9)	
Service holder [198 (38.6)]	100 (19.5)	31 (6.0)	67 (13.1)	
Educational status				0.084
Illiterate [141 (27.5)]	35 (6.8)	55 (10.7)	51 (9.9)	
Primary [98 (19.1)]	40 (7.8)	34 (6.6)	24 (4.7)	
Secondary + higher [274 (53.4)]	78 (15.2)	107 (20.8)	89 (17.4)	
Type of family				0.001
Joint [408 (79.5)]	147 (28.7)	168 (32.6)	93 (18.2)	
Single [105 (20.5)]	6 (1.2)	28 (5.5)	71 (13.8)	
Monthly family income (BDT)				0.001
≤6,999 [307 (59.8)]	115 (22.4)	106 (20.7)	86 (16.8)	
>7,000 [206 (40.2)]	38 (7.4)	90 (17.5)	78 (15.2)	

Table 2. Socio-economic and demographic variables associated with practice of exclusive breastfeeding among mothers in Bangladesh with at least one child aged 6–12 months.

Characteristics [N (%)]	Practices on exclusive breastfeeding N (%)		P-value
	Good [143 (27.9)]	Poor [370 (72.1)]	
Age (years)			0.001
≤30 years [314 (61.2)]	122 (23.8)	192 (37.4)	
≥31 years [199 (38.8)]	21 (4.1)	178 (34.7)	
Place of delivery			0.001
Hospital [309(60.2)]	130 (25.3)	179 (34.9)	
Home [204(39.8)]	13 (2.5)	191 (37.3)	
Occupation			0.001
Housewife [315 (61.4)]	136 (26.5)	179 (34.9)	
Service holder [198(38.6)]	7 (1.4)	191 (37.2)	
Educational status			0.006
Illiterate [141 (27.4)]	89 (17.3)	52 (10.1)	
Primary [98(19.1)]	80 (15.6)	18 (3.5)	
Secondary + higher [274 (53.4)]	201 (39.2)	73 (14.2)	
Type of family			0.001
Joint [408 (79.5)]	143 (27.8)	265 (51.7)	
Single [105 (20.5)]	6 (1.2)	99 (19.3)	
Monthly family income (BDT)			0.001
<6,999 [307(59.8)]	130 (25.3)	177 (34.5)	
≥7,000 [206(40.2)]	13 (2.6)	193 (37.6)	

Table 3. Effects of socio-economic and demographic variables associated with knowledge of exclusive breastfeeding among mothers in Bangladesh with at least one child aged 6–12 months.

Explanatory variables	Adjusted odds ratio (AOR)	95% CI for AOR		P-value
		Lower	Upper	
Age (years)				
≤30 ^R				
≥31	0.040	0.021	0.079	0.001
Education				
Illiterate ^R				
Literate	1.356	1.036	1.635	0.001
Occupation				
Housewife ^R				
Service holder	21.352	5.170	88.174	0.001
Place of delivery				
Hospital ^R				
Home	0.039	0.017	0.095	0.001
Type of family				
Joint ^R				
Single	27.445	11.494	65.537	0.001
Monthly family income (BDT)				
≤6,699 ^R				
≥7,000	0.197	0.088	0.442	0.001
Model summary: Model chi-square = 233.492 (p-value = 0.001) Nagelkerke R ² = 0.512				

^Rreference category**Table 4. Effects of socio-economic and demographic variables associated with practice of exclusive breastfeeding among mothers in Bangladesh with at least one child aged 6–12 months.**

Explanatory variables	Adjusted odds ratio (AOR)	95% CI for AOR		P-value
		Lower	Upper	
Age (years)				
≤30 ^R				
≥31	0.084	0.050	0.143	0.001
Education				
Illiterate ^R				
Literate	1.269	0.968	1.563	0.001
Occupation				
Housewife ^R				
Service holder	9.992	4.485	22.260	0.001
Place of delivery				
Hospital ^R				
Home	0.208	0.111	0.389	0.001
Type of family				
Joint ^R				
Single	0.024	0.010	0.057	0.001
Monthly family income (BDT)				
≤6,699 ^R				
≥7,000	0.092	0.050	0.168	0.001
Model summary: Model chi-square=388.475(P-value 0.001) Nagelkerke R ² =0.765				

^Rreference category

Discussion

This study surveyed the knowledge and practice of EBF among mothers in rural area of Rajshahi district, Bangladesh. There are two major findings for this study. First, poor knowledge and practice of EBF was seen in 32.0% and 27.9% of mothers. Second, mothers that had good knowledge and practice about EBF were aged ≤ 30 years, were housewives, had a hospital delivery, were joint family members and had $\leq 6,999$ BDT monthly family income.

The study assumed that most of the mothers would have good knowledge and practice of EBF; however, the study demonstrated that a small percentage of mothers in this area were assessed as having a good level of knowledge and practice of EBF. This study therefore highlights the need for EBF health education programs to educate mothers.

Until now, according to the best of our knowledge this type of study has not been performed in Bangladesh, but similar studies have been conducted in different populations²². The study found that, middle aged mothers (≤ 30 years) had low knowledge and practices as compared with older respondents (> 31 years) and similar results have been found in other countries²³. The present study found that hospital delivery respondents had low knowledge and practices as compared with their counterpart, which is consistent with a previous study in Ethiopia²⁴. An extra assumption was that most of the service holder mothers, and those with secondary and higher level of education would have a better knowledge and practice than housewives or those who did not have a high level of education; however, we found that housewives had good knowledge and practices compared with those that were service holders. This study result is consistent with previous other studies^{25,26}.

Those mothers that had joint families had a good of knowledge and practice compared with single mothers. This may be because those mothers in joint families can share their knowledge with other family members. The study also found that mothers from families with $\leq 6,999$ BDT monthly income had good knowledge and practice.

As a final point, the idea of good knowledge and practices of EBF had various definitions. Therefore it is challenging to measure, particularly using the questionnaire used in the present study. However, this study measures knowledge and practice through a lot of indicators, which were seen in a previous study²⁷.

This study had a few limitations. Firstly, it was a village based study and people are busy. Secondly, there are 64 districts and 491 sub-districts (upazilas) in Bangladesh, and in this study we considered only one district and one upazila; therefore, more upazilas should be looked.

Conclusions

This study found that there are huge knowledge and practice gaps regarding EBF among mothers that have at least one child aged 6–12 months. As malnutrition will be decreased if EBF is widely established, this study suggests that EPF related education and interventions could play an important role to increase the level of knowledge and practice concerning EBF among this population of mothers. Health policy makers of Bangladesh should consider performing a study with a larger sample size so that further information can be obtained regarding knowledge and practice of EBF in Bangladesh.

Data availability

Underlying data

The underlying data for this study cannot be openly shared since the consent to participate obtained from the mothers explicitly stated that their data would remain confidential and only be reported in an aggregated manner. Anyone wishing to access the underlying data should first contact the corresponding author (md.hossain@umt.edu.my) who will facilitate contact with the ethical review board who approved the study. Data will be provided to all applicants that apply to access the data.

Extended data

Figshare: Knowledge and practices about breastfeeding in rural areas of Rajshahi District, Bangladesh: A cross-sectional study, <https://doi.org/10.6084/m9.figshare.9975704.v1>²⁸.

This project contains the following extended data:

- Questionnaire in Bangla and English.

Data are available under the terms of the [Creative Commons Attribution 4.0 International license](#) (CC-BY 4.0).

Acknowledgements

The authors gratefully acknowledge the authority of the village hospitals of Rajshahi District, Bangladesh, for giving us permission to use from their catchment area and University Malaysia Terengganu.

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<http://www.doi.org/10.6084/m9.figshare.9975704.v1>

Open Peer Review

Current Peer Review Status: ? X ?

Version 1

Reviewer Report 29 June 2020

<https://doi.org/10.5256/f1000research.22133.r56433>

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This study surveyed the knowledge and practice of exclusive breastfeeding (EBF) and its relation to various social-economic, demographic factors among mothers with at least one child aged 6-12 months in rural area of Rajshahi district, Bangladesh. Poor knowledge and practice of EBF was reported. Conclusions from this study play an important role in optimizing EBF practices. However, I have some suggestions and major concerns that must be addressed.

Title:

I suggest you change breastfeeding to exclusive breastfeeding. Because your manuscript fully focused on EBF not breastfeeding.

Abstract:

In this section, I agree with suggestions from Felix Emeka Anyiam. I think the reviewer had already worked carefully.

Introduction:

In this section, the statement "To the best of our knowledge, in Bangladesh this type of study has not been conducted" is not exactly correct. Because I had found similar studies conducted in Bangladesh when I searched on Pubmed.

Such as two articles,

1. "Exclusive breastfeeding practice during first six months of an infant's life in Bangladesh: a country based cross-sectional study" (<https://doi.org/10.1186/s12887-018-1076-0>)¹. It is the Bangladesh Demographic and Health Survey (BDHS-2014) which collected data from 17,863 Bangladeshi married women in reproductive age from the entire country.

2. "Knowledge and practices of exclusive breastfeeding among mothers in rural areas of Rajshahi district in Bangladesh: A community clinic based study" (<https://doi.org/10.1371/journal.pone.0232027>)². It is published on May 2020. The present study was similar with it, including the same study design, sample size and analysis. Is it the same one?

I suggest the author reported more findings from previous studies and addressed your novelty in this manuscript.

Methods:

In this section, I agree with suggestions from Felix Emeka Anyiam. Additionally, there was a minor error. "ten questions about the knowledge of breastfeeding were provided". But nine questions were mentioned above. Please check it.

Results:

1. "a major portion of respondent's (59.8 %) had a monthly family income <6,999 BDT". Is it $\leq 6,999$ BDT? Because monthly income was categorized two groups ($\leq 6,999$ Bangladeshi Taka (BDT) and $\geq 7,000$ BDT). Please check it. Also, monthly income was not the same in the four tables (table 1 $\leq 6,999 > 7,000$, table 2 $< 6,999 \geq 7,000$ table 3 and table 4 $\leq 6,699 \geq 7,000$, which one is correct? I thought 6,699 was just a typing error. Is it?).

2. The statement "There was a good level of knowledge and practice of EBF

Among the mothers that participated in this study", but I thought it is not good enough (32% vs.27.9%). And you mentioned in the discussion "poor knowledge and practice of EBF was seen". Is it opposite to results? Please check it.

1. For table 3 and table 4, I have different explanations. For table 3, my interpretations were mothers aged ≥ 31 years, gave birth at home and had $\geq 7,000$ BDT monthly family income were less likely to have good knowledge of EBF compared to their counterparts ($p < 0.05$). Mothers that were literate, service holder and had single families were more likely to have good knowledge of EBF compared to their counterparts ($p < 0.05$). For table 4, my interpretations were mothers aged ≥ 31 years, gave birth at home, had single families and had $\geq 7,000$ BDT monthly family income were less likely to have good practices of EBF compared to their counterparts ($p < 0.05$). Mothers that were literate, service holder were more likely to have good practices of EBF compared to their counterparts ($p < 0.05$).

Because in my opinion, If $OR > 1$, 95% CI did not include 1 and $p < 0.05$, the dependent variable was a risky factor. The risk for the dependent variable (which was label as 1) had more times of risks than the dependent variable (which was label as 0). If $OR < 1$, 95% CI did not include 1 and $p < 0.05$, the dependent variable was a protective factor. Please see more information of logistic regression interpretation.

Discussion:

In this section, I agree with suggestions from Felix Emeka Anyiam. Moreover, I had different explanations for logistic regressions. This discussion may be rewritten if you agreed with me.

References

1. Hossain M, Islam A, Kamarul T, Hossain G: Exclusive breastfeeding practice during first six months of an infant's life in Bangladesh: a country based cross-sectional study. *BMC Pediatrics*. 2018; **18** (1). [Publisher Full Text](#)
2. Rana MM, Islam MR, Karim MR, Islam AZ, et al.: Knowledge and practices of exclusive

breastfeeding among mothers in rural areas of Rajshahi district in Bangladesh: A community clinic based study. *PLoS One*. 2020; **15** (5): e0232027 [PubMed Abstract](#) | [Publisher Full Text](#)

Is the work clearly and accurately presented and does it cite the current literature?

Partly

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

Partly

If applicable, is the statistical analysis and its interpretation appropriate?

Partly

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: human nutrition, food safety, nutrition and health

We confirm that we have read this submission and believe that we have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however we have significant reservations, as outlined above.

Reviewer Report 16 December 2019

<https://doi.org/10.5256/f1000research.22133.r57778>

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Kishwar Azad

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The article titled, 'Knowledge and practices about breastfeeding in rural areas of Rajshahi District, Bangladesh': A cross sectional study, examines the knowledge and practices regarding exclusive breastfeeding among mothers with at least one child aged 6-12 months.

I have the following comments:

- The authors' claim that this is the first study of its sort, is unjustified. Several studies have been carried by researchers independently and also based on data obtained during Bangladesh health and demographic survey.
- There are factual errors, e.g. 91% of mothers breastfeeding their babies up to 2 years, is an overestimation.
- What is a 'village hospital'?
- Why did the authors use lists used in EPI – why wasn't household survey carried out?
- How were mothers with 'psychological disorders' ruled out?
- The participants were interviewed during 'routine check-ups' in their homes. This is not clear. What constituted routine check-up?
- Does under 30 years constitute middle age? Why was this age taken as cut-off point?
- Why was income Tk 6999/ used as a cut-off point?
- The authors do not explain why service holders were less knowledgeable than housewives regarding EBF, and why women who delivered in hospital were less likely to practice EBF than 'their counterpart'.
- Discussion is very thin.
- Conclusions: Malnutrition is not solely dependent on poor EBF practices as the authors claim. Poor weaning also contributes to malnutrition.

Is the work clearly and accurately presented and does it cite the current literature?

Partly

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

Partly

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are all the source data underlying the results available to ensure full reproducibility?

No source data required

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Maternal and Neonatal Health

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Reviewer Report 04 December 2019

<https://doi.org/10.5256/f1000research.22133.r56807>

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Felix Emeka Anyiam

University of Port Harcourt , Port Harcourt, Nigeria

The article titled: Knowledge and practices about breastfeeding in rural areas of Rajshahi District, Bangladesh, is a cross-sectional study focused on mothers with at least one child age 6-12 months residing in a rural community. The study is relevant, especially as it is carried out in a rural area where majority of mothers may not have adequate access to Antenatal Care services which is a vital contact for enhancing knowledge and practice relating to EBP. Poor Knowledge and Practice about EBF could be a pointer towards strengthening the Antenatal care services in rural communities. As "Infant development is measured by nutritional level", it becomes appropriate to create more awareness towards EBF practices, especially at the rural level.

Below are my comments and recommendations:

Abstract

1. At the Background section, the authors stated that the study was among mothers with at least one child age (6-12 years). But in the Methods section they mentioned (6-12) months. Of course it can't be both. Please revisit and use the correct age.
2. In the Result section, the authors mentioned: "*The incidence of EBF good knowledge and practices was 32.0% and 27.9% among mothers with at least one child age (6-12) months.*" I believe this value here is prevalence and not incidence as this is a cross sectional study, as incidence is a measure of the occurrence of new cases of disease (or some other outcome) during a span of time.
3. In the Result section, the authors mentioned: "*Mothers that had a monthly family income of $\leq$ 6 699 BDT had less knowledge and practices about EBF compared to mothers with a family income of >6 699 BDT.*" I think from the results in Tables 1 & 2, it's more (or good which is the right term to use) Knowledge and Practice and not less for both.

4. **Keywords:** Knowledge should be separated from Practice (Knowledge, Practice), Chi-square Test and Binary Logistic Regression shouldn't be key words as this is not a Statistical methodology paper. Other key words are recommended.

Introduction

1. *In text Referencing:* The information in Reference **8**, *"EBF for at least 6 months is not a general practice in developed nations, and is even less in developing nations"* is too old (1999) and may not be the true state of things in the present time. A reference not older than 10 years should be sought and is recommended.
2. *In text Referencing:* The information in Reference **10**, *"Nearly all Bangladeshi children are breastfed to some extent in the first year of life and many mothers continue to breastfeed up to the second year of a baby's life (91%)"* is from one study and not suitable for this sort of generalization. A systematic review would have been more appropriate.
3. *In text Referencing:* Also the same reference **10** stated something contrary from the previous sentence above: *"Bangladesh has the highest prevalence of malnourished in South East Asia with a high percentage of children aged 59 months being underweight."* I am not sure which to consider appropriate.
4. The authors stated in the last paragraph of the introduction: *"Only a few studies have been carried out on EBF, and most of these studies were carried out in developing countries."* Although my own personal search showed several studies. Authors should use a more rigorous search strategy.
5. The authors stated in the last paragraph of the introduction: *"Furthermore, methodological concerns associated with the measurement of knowledge and practices about EBF have not been adequately addressed in earlier studies."* If this is so, then the studies applicable should be stated.
6. The authors stated in the last paragraph of the introduction: *"The difficulty of judging knowledge lies in its multidimensional aspects; most of studies have been focused on a few indicators."* I understand accessing knowledge of any kind requires a multidimensional approach but I do not agree that it's a difficult process. Please rephrase sentence.
7. On the last paragraph of the introduction, the authors stated, *"...most of studies have been focused on a few indicators."* Should read *"most of the studies have been focused on a few indicators."*
8. The statement: *"To the best of our knowledge, in Bangladesh this type of study has not been conducted"* is not completely accurate as my personal search found several studies.

Methodology

Study design

1. Study design was not mentioned. Although from the title of the study, it was clear that this is a cross-sectional study but it was not mentioned in the right place. What was said here was: *"A village hospital based study..."* which is not a study design. Please include the study design in this section.

2. The authors stated: "There are several reasons why we selected mothers who have at least one child aged 6–12 months" and I saw only two reasons. Maybe it should be stated two reasons and not several reasons.
3. The authors stated, "Firstly, to the best of our knowledge in this area no studies have been conducted on EBF" and personally for me, I found several similar studies in my search.

Simple size determination

1. The authors stated, "The following formula has been used for calculating sample size: $n = N / (1 + Nd^2)$..." and they gave a reference from *Haque et al., (2012)*. The original author for this formula is Taro Yamane, and the Reference link is:[Yamane, Taro. 1967. Statistics, An Introductory Analysis, 2nd Ed., New York: Harper and Row.¹]
2. Using this formula, the minimum sample size should have been 371 when calculated and not 366 as stated.

Participants

1. "A two-stage purposive sampling approach was chosen to enrol mothers.." 'enrol' should read, 'enroll.'
2. "The inclusion criteria of the participants was mothers who have at one child aged 6–12 months.." Should read, "The inclusion criteria of the participants were mothers who have at least one child aged 6–12 months ..."
3. The authors stated, "A two-stage purposive sampling approach was chosen to enrol mothers that have at least one child aged 6–12 months from Rajshahi district. In the first stage, out of nine upazila of Rajshahi District, one upazila was purposively selected. In the second stage, purposive sampling was used for the selected sample size."
The whole process of the sample size selection is not clear as the authors had stated in the Abstract, "A total of 513 mothers who had at least one child's age (6-12) months from 32 different village hospitals in rural areas of the Rajshahi District, Bangladesh."
Is 32 different village hospitals from one Upazila? Also, the 32 different village hospitals couldn't have been the sample size and so a step in selecting the village hospitals is missing. This study would have done well with a Probability sampling.
4. The authors stated, "The interviews took place at the participants homes." How is this possible when the authors have already stated that the sample size was from 32 different village hospitals?

Data collection

1. The Sentence, "The survey questionnaires were drafted in Bangla, the national and mother tongue of Bangladesh and was then for research purpose translated..." is not comprehensible. Please rephrase.

Independent variables

1. I would have preferred the raw ages of the women were used so we can have mean age in the study population, before categorization for the inferential statistics purposes.

Statistical analyses

1. In the statement, "Demographic differences regarding good knowledge and practices of EBF were assessed by χ^2 analysis significance.." It is proper to put a Chi-Square before the χ^2 symbol. Also, the 'significance' should be removed.

2. "95% confidence intervals (Cis)" Cis should read CIs

Results

1. I think the first table for this study should have been a descriptive statistics of all the independent variables. The authors started with an inferential statistics, where they compared the independents and the dependents variables. In their methodology they mentioned, "Descriptive analyses were conducted..." although I didn't find a separate table for the descriptive analysis, which is the proper thing to do, as it was merged with the inferential statistics table.
2. They also mentioned, "The incidence [*which I think should be changed to prevalence*] of EBF good knowledge and practices was 32.0% and 27.9% among mothers with at least one child age (6-12) months." No separate descriptive statistics table to verify this information.

Discussion

1. The authors stated "Until now, according to the best of our knowledge this type of study has not been performed in Bangladesh, but similar studies have been conducted in different populations."
The phrase 'similar studies' [plural] should have more than one reference. And the Reference **22** quoted here has to do with Tuberculosis (TB) and not EBF: [Moya EM, Biswas A, Chávez Baray SM, *et al.*: Assessment of stigma associated with tuberculosis in Mexico. *Public Health Action*. 2014; 4(4): 226-32.²].
2. The authors incorrectly stated, "The study found that, middle aged mothers (≤ 30 years) had low knowledge and practices as compared with older respondents (>31 years)..." and similar results have been found in other countries". This is contrary to findings in Tables 1 & 2, and also the findings stated in the Abstract section of the study.
Also the phrase, "similar results have been found in other countries" is from a study conducted in one country, India. I do not see the justification for the phrase, 'other countries.'
3. The authors incorrectly stated, "The present study found that hospital delivery respondents had low knowledge and practices.." This is totally in opposite to findings in Tables 1 & 2, and also the findings stated in the Abstract section of the study.
4. "This study result is consistent with previous other studies." Was mentioned in the concluding aspect of the third paragraph. Reference **26** is a TB study [Rana M, Sayem A, Karim R, *et al.*: Assessment of knowledge regarding tuberculosis among non-medical university students in Bangladesh: a cross-sectional study. *BMC Public Health*. 2015; 15(1): 716.³].
5. The authors stated, "**This study had a few limitations. Firstly, it was a village based study and people are busy.**" I do not see this as a limitation. Appropriate study limitations recommended.

References

1. Yamane Taro: Statistics, An Introductory Analysis, 2nd Ed. New York: Harper and Row. 1967.
2. Moya EM, Biswas A, Chávez Baray SM, Martínez O, *et al.*: Assessment of stigma associated with tuberculosis in Mexico. *Public Health Action*. 2014; 4 (4): 226-232 [PubMed Abstract](#) | [Publisher Full Text](#)

3. Rana M, Sayem A, Karim R, Islam N, et al.: Assessment of knowledge regarding tuberculosis among non-medical university students in Bangladesh: a cross-sectional study. *BMC Public Health*. 2015; **15**: 716 [PubMed Abstract](#) | [Publisher Full Text](#)

Is the work clearly and accurately presented and does it cite the current literature?

Partly

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

Partly

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are all the source data underlying the results available to ensure full reproducibility?

Partly

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Public Health, Population Health, Global Health, Epidemiological Research, Biostatistics, Open Research Data, Open Science, Data Science, Non-communicable diseases, Maternal and Child Health, Vulnerable Populations, Population at Risk, Reproductive Health, Data Management, Community-Based Research, HIV/AIDS Prevention, TB Prevention, Health Management and Health Promotion

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

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