



RESEARCH ARTICLE

REVISED Prelacteal feeding practice and maintenance of exclusive breast feeding in Bihar, India – identifying key demographic sections for childhood nutrition interventions: a cross-sectional study [version 3; peer review: 2 approved]

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Abstract

Background: Exclusive breastfeeding (EBF) during the first six months of life is considered a high impact, but low-cost, measure for improving nutritional status, and reducing morbidity and mortality among children. However, providing prelacteal feed to a newborn, a widely practiced custom in rural India, is a major barrier to the practice of EBF. The present study evaluated the association between provision of prelacteal feeding and continuation of EBF among children up to 3 months age in Bihar, a resource-poor Indian state.







Methods: Data from four rounds of a population-based multi-stage sampling survey, conducted in 8 districts of Bihar between 2012 and 2013, were used for the present analysis. Using simple and adjusted logistic regression modelling, we tested the association of providing prelacteal feeding with two outcome measures - 1) giving only breastmilk during the last 24 hours, and 2) exclusively breastfed (EBF) since birth (excluding the first 3 days of life).

Results: Among 10,262 children for whom prelacteal feeding data was available, 26% received prelacteal feeding. About 55% mothers reported that their children were exclusively breastfed, whereas 82% mothers provided only breastmilk to their children during the previous 24 hours. Children who received prelacteal feeding had approximately 60% lesser odds of being breastfed exclusively during the previous 24 hours [AOR = 0.39(0.33-0.47)] and 80% lesser odds of receiving continued EBF since birth [AOR = 0.20(0.17-0.24)].

Conclusions: Frontline workers (FLW) provide nutritional counselling to mothers and children of rural India. In order to improve uptake of

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1. **Manas Roy** , Ministry of Health and Family Welfare, New Delhi, India
2. **Anna Lartey** , Food and Agriculture Organization of the United Nations (FAO), Rome, Italy

Any reports and responses or comments on the article can be found at the end of the article.

EBF, the families practicing prelacteal feeding should be identified early and educated on the harmful effects of prelacteal feeding for EBF and subsequently on infant health. Midwives/nurses at the public and private facilities as well as the home birth attendants should also be made aware about the negative effects of prelacteal feed.

Keywords

Prelacteal feeding, Exclusive breastfeeding, India

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Author roles: **Das A:** Conceptualization, Formal Analysis, Methodology, Writing – Original Draft Preparation; **Sai Mala G:** Investigation, Resources, Supervision; **Singh RS:** Project Administration; **Majumdar A:** Project Administration; **Chatterjee R:** Data Curation, Investigation; **Chaudhuri I:** Project Administration, Supervision; **Mahapatra T:** Investigation, Methodology, Resources

Competing interests: No competing interests were disclosed.

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REVISED Amendments from Version 2

Based on the suggestions of Dr. Anna Larrey, the following changes have been made in the manuscript:

- 1) In the first sentence of the 'Methods' section of the abstract, replaced 'was' with 'were'.
- 2) In the 'Conclusion' section of the abstract, added the following sentence at the end – *"Delivery conductors at the public and private facilities as well as the home birth attendants should also be made aware about the negative effects of prelacteal feed"*.
- 3) In the first sentence of the second paragraph under 'Introduction', replaced 'custom' with 'practice' and 'nation' with 'countries'.
- 4) In the second sentence of the third paragraph under 'Introduction', replaced 'till recommended age' with 'sixth month'.
- 5) In the last sentence of the third paragraph under 'Introduction', replaced 'children' with 'infants'.
- 6) In the second sentence of the second paragraph under 'Discussion', corrected the spelling error 'providing'.
- 7) Added the following sentences at the end of the second paragraph of 'Discussion' section: *"Another important intervention would be to intensify health education of would-be mothers, especially during pregnancy, and other family members such as their mothers-in-law about the harmful effects of prelacteal feeding for EBF and subsequently on infant health. Targeted education on the same topic for midwives/nurses working at the public and private hospitals and birth attendants conducting home deliveries may also prove useful in reducing the practice of prelacteal feeding"*.
- 8) In the last sentence of the paragraph on 'Limitations' under 'Discussion' section, replaced 'backward' with 'deprived'.

See referee reports

Introduction

Breastfeeding, besides being natural and inexpensive, serves as the ideal source of infant nutrition. It is not only easily digestible and meets the dietary requirements of the newborn but also provides a number of unique biological and psychological benefits to the mother and child¹. If an infant is provided only breast milk and no additional food, water, or other liquids (with the exception of medicines, if needed) up to the sixth month of life, then that infant is considered to be exclusively breastfed (EBF)². A plethora of evidence endorse early initiation and maintenance of EBF till the recommended age as a key intervention against childhood malnutrition, especially for the low- and middle-income countries^{3,4}. It has been estimated that, globally, optimal breastfeeding and complementary feeding practices have the potential to prevent more than 200,000 infant deaths annually⁵. However, despite substantial efforts, only about one-fourth of infants worldwide receive EBF for the recommended duration i.e. six months⁶.

Providing prelacteal feeding, defined as giving something other than breast milk to an infant during the first three days of life, is an established practice in rural India and other developing

countries^{7,8}. As the definition suggests, provision of prelacteal feeding entails that an infant is not exclusively breastfed. Additionally, prelacteal feeding is associated with various other sub-optimal breastfeeding practices such as not giving colostrum to the neonate and delayed initiation of breast feeding⁷. Therefore, prelacteal feeding is widely recognized as an important determinant of childhood malnutrition and, subsequently, childhood morbidity and mortality⁸.

Although the uptake of EBF in India has increased during the recent years, it is still far from optimal⁹. It is often seen that children are put on EBF during initial months of infancy but EBF is not continued till sixth month⁹. Therefore, understanding the determinants of continuation of EBF is important for identifying the areas of intervention for childhood nutrition programs in India. The present study aimed to determine the association between provision of prelacteal feeding and continuation of EBF among 3 months old infants in Bihar, an impoverished Indian state.

Methods

CARE India, a non-government organization, in collaboration with the State Government of Bihar, initiated a project named Integrated Family Health Initiative (IFHI) in 2011 with the primary objective of reducing mortality and malnutrition among infants and mothers in Bihar. As part of the evaluation of IFHI, multiple population based cross-sectional surveys were undertaken to ascertain various health and developmental indicators in the state¹⁰. In total, five rounds of these surveys (Rounds I-V), using lot quality assurance sampling (LQAS) technique (a small sample survey design based on binomial distribution)¹¹, were conducted in eight districts (from total 38) of Bihar between 2011 and 2013. A two-stage sampling strategy was adopted in each of the survey rounds: 1) from the list of Anganwadi Centers (village-level 'last mile' health service delivery points) in each of the 137 study blocks (sub-districts), 19 Anganwadi Centers were selected using probability proportional to size (PPS) sampling; 2) In the next stage, at the selected Anganwadi Center catchment areas, four eligible households were identified through systematic sampling. An eligible household was defined as that containing mothers of infants of four different age strata: 0–2, 3–5, 6–8, and 9–11 completed months (i.e. a child from any of the four age groups had to be present in the surveyed household). The sampling methodology has been described in a previous article¹². In the current analysis, we used the information about infants aged 0–2 completed months during Round-II to Round-V of the LQAS survey (Extended data¹³).

Two separate outcome indicators for EBF were used – 1) exclusive breastfeeding in the last 24 hours (previous day's morning to current day's morning), and 2) practice of EBF since birth (excluding the first 3 days of life). We tested the association of providing prelacteal feeding with the two outcome indicators using separate bivariate and multiple logistic regression models. The multiple logistic regression models were adjusted for the following covariates – child's gender, number of living siblings, caste, religion, economic status of the household, maternal education level and season. Caste-wise, the families were

classified into marginalized caste [scheduled castes (SC) / scheduled tribes (ST) / other backward castes (OBC)] and other/general caste. Religion categories were Hindu and non-Hindu. According to the level of education, mothers were classified into three categories – no formal education, school education up to eighth standard, and school education above eighth grade (middle school). Economic status was assessed using an asset index (AI) based on possession of 25 different household items. For calculation of AI, a relative weight was assigned to each of these items and an aggregated score was generated by adding the weighted score for each item possessed by a household. The cumulative asset scores were then log-transformed to create the AI. Based on the percentile distribution of AI, we then created AI tertiles and classified the families according to the AI tertile they belonged to – low, middle and high wealth¹². As seasonal variations have been reported to influence breastfeeding practices in rural Bihar¹², we further adjusted for the season of data collection. Based on the prevailing weather pattern in Bihar, we classified the interviews conducted during November to February as those conducted in ‘winter’ season, April to August as ‘summer’ and rest of the months as ‘autumn/spring’. All analyses were carried out using the survey data analysis procedures in SAS (version 9.4) using relevant sample weights and incorporating information about multi-stage sampling.

Results

The current analysis utilized the information on 10,392 infants aged up to 3 months for whom complete information on the relevant parameters was available. The participating households were predominantly Hindu (86%) and about one-fourth (27%)

of them belonged to marginalized castes (Scheduled Castes and Scheduled Tribes). Only about 17% families lived in a ‘Pucca’ or brick-built house. Almost two-thirds of the mothers (64%) did not receive any formal education. Characteristics of the surveyed population have been described in detail in a separate publication¹². Among these children, 8533 (82.11%) received only breastmilk during the previous 24 hours, while 5713 (54.97%) had been given nothing but breastmilk (excluding ORS and medicines) since the third day after birth. Out of 10,262 children for whom prelacteal feeding data was available, 2686 (26.17%) received some food other than breast milk during the first three days of life. Logistic regression analysis revealed that, compared to those without prelacteal feeding, infants who received prelacteal feeding had approximately 60% lesser odds of being breastfed exclusively during the previous 24 hours (adjusted odds ratio (AOR) = 0.39; 95% confidence interval (CI) = 0.33-0.47) and 80% lesser odds of receiving continued EBF since birth (AOR = 0.20; 95% CI = 0.17-0.24) [Table 1].

Discussion

EBF for the first six months has been recognized as a key intervention to meet India’s Millennium Development Goals (MDG) target regarding child malnutrition (MDG-1) and mortality (MDG-4)¹². Despite several programmatic measures, rate of increase in the uptake of EBF in India has been slow¹⁴. As India moves from the MDGs to the era of more demanding Sustainable Development Goals (SDG), identifying key intervention areas for improvement in EBF is an essential requirement for achieving the targets pertaining to childhood morbidity and mortality.

Table 1. The association (Odds ratios and 95% confidence intervals) between different predictors and continuation of exclusive breastfeeding among up to 3 months old children. LQAS rounds 2 to 5. Bihar, India. 2012–2014 (n=10,392)*

Predictors		Reference	Outcome [Odds ratios (95% CI)]			
			Breastfeeding exclusively during past 24 hour period		Practice of EBF till date of interview (excluding initial 3 days)	
			Unadjusted	Adjusted**	Unadjusted	Adjusted**
Prelacteal feed given		Not given	0.37(0.31, 0.44)	0.39(0.33, 0.47)	0.19(0.16, 0.22)	0.20(0.17, 0.24)
Hindu		Non-Hindu	1.33(1.06-1.66)	1.14(0.89-1.45)	1.21(1.02-1.44)	1.02(0.84-1.24)
Marginalized		Non-marginalized	1.49(1.17-1.89)	1.26(0.97-1.64)	0.82(0.68-0.99)	0.87(0.71-1.08)
Mother's education						
	Educated upto standard VIII	Illiterate	0.79(0.65-0.95)	0.88(0.72-1.08)	1.22(1.06-1.41)	1.12(0.96-1.3)
	Educated above standard VIII		0.71(0.58-0.87)	0.8(0.64-1.01)	1.18(1.01-1.38)	1.12(0.93-1.35)
Wealth index						
	Highest tertile	Lowest tertile	0.67(0.55-0.8)	0.71(0.58-0.87)	1.13(0.99-1.29)	1.08(0.92-1.26)
	Middle tertile		0.89(0.73-1.09)	0.89(0.73-1.1)	1.13(0.98-1.29)	1.15(0.99-1.33)
Gender of the child		Female	0.92(0.79-1.07)	0.92(0.79-1.08)	1.18(1.05-1.32)	1.21(1.07-1.37)
Number of living siblings*			1.03(0.97-1.08)	0.99(0.94-1.04)	0.96(0.92-0.99)	0.98(0.94-1.02)

*Treated as continuous variable. The odds ratio depicts the change in the estimate with every unit increase in the number of siblings.

**Each predictor was simultaneously adjusted for rest of the predictors. The adjusted models were further adjusted for the season during which interview was conducted

Numbers in bold indicate statistically significant association ($P < 0.05$)

We found that about a quarter of families in rural Bihar provided prelacteal feed to neonates and those practicing prelacteal feeding were less likely to maintain EBF. Therefore, on one hand, awareness campaigns and other measures against the unwholesome practice of prelacteal feeding need to be reinforced; but more importantly, our findings suggest that the families providing prelacteal feed to neonates constitute a key group for targeted early interventions on EBF. In rural India, a team of ground level health workers called frontline workers (FLW) - comprising of Anganwadi workers (AWW) and Accredited Social Health Activist (ASHA) – help in reaching various services offered under Integrated Child Development Services (ICDS) scheme and National Health Mission programs to the mothers and children. The Auxilliary Nurse Midwives or ANMs are the key health functionary at the Health Sub-centre (HSC) level (consisting of several villages) with a broad set of responsibilities, including the support, local supervision and capacity building of the ASHA and AWW working in respective HSC catchment areas. As these cadre of health workers provide counselling on childhood nutrition e.g. EBF and complementary feeding during their pre- and post-natal home visits, they can be further equipped to intensify their focus on the families that report practicing prelacteal feeding. We recommend efforts to ensure active identification of these families during FLW home visits and to ascertain that they are subjected to EBF counselling and other programmatic measures on EBF maintenance. Another important intervention would be to intensify health education of would-be mothers, especially during pregnancy, and other family members such as their mothers-in-law about the harmful effects of prelacteal feeding for EBF and subsequently on infant health. Targeted education on the same topic for midwives/nurses working at the public and private hospitals and birth attendants conducting home deliveries may also prove useful in reducing the practice of prelacteal feeding.

Limitations - There were few limitations in the current study. First, owing to cross-sectional nature of the data we were often unsure about the temporal relation between the study parameters. This limited our ability to draw causal inferences from observed associations between dependent and predictor variables. Second, the information on breastfeeding practices was based on mothers' report and not actual observation. Thus, there was possibility of social desirability bias as the mothers who were aware about EBF might have reported that they practiced the same even if they did not. The reported nature of data also made our analyses susceptible to recall bias - especially for the data on EBF for full six months. Further, as the mothers of under three month old children were interviewed the ability to recall Prelacteal

feeding could vary between mothers of neonates and that of more than two month old children. However, the ability to recall is likely to be non-differential i.e. the recall is unlikely to differ between the mothers practicing EBF and those who were not. Finally, because the study was conducted in an economically deprived region, the findings may not be generalizable to pan-India level and also among families belonging to higher socioeconomic strata.

Ethics approval

The current study was approved by the 'Institutional Committee for Ethics and Review of Research' of Indian Institute of Health Management Research (www.iihmr.org), Jaipur, India.

Consent

Verbal informed consent was obtained from each agreeing participant before the interview and measurements, after explaining the details of the study in a language that they could understand. Given that approximately 60% of the study participants did not have any formal education, the investigators opted for verbal consent instead of written consent.

Data availability

The data underlying this study and data codebook is available from Open Science Framework.

OSF: Dataset 1. Data for Exclusive breastfeeding - LQAS R2-R5. <https://doi.org/10.17605/OSF.IO/FM925>¹³

This dataset is available under a CC0 1.0 Universal License.

Extended data

Questionnaires used as part of this study are available from Open Science Framework.

OSF: Extended data. Data for Exclusive breastfeeding - LQAS R2-R5.

File - CARE LQAS Qre 0-2 R5_SA.pdf

<https://doi.org/10.17605/OSF.IO/FM925>¹³

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Grant information

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The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

References

- McGuire S: **U.S. Dept. of Health and Human Services. The Surgeon General's Call to Action to Support Breastfeeding.** U.S. Dept. of Health and Human Services, Office of the Surgeon General. 2011. *Adv Nutr.* 2011; 2(6): 523–4. [Publisher Full Text](#)
- Kramer MS, Kakuma R: **Optimal duration of exclusive breastfeeding.** *Cochrane Database Syst Rev.* 2012; 8(8): CD003517. [PubMed Abstract](#) | [Publisher Full Text](#)
- Jones G, Steketee RW, Black RE, *et al.*: **How many child deaths can we prevent this year?** *Lancet.* 2003; 362(9377): 65–71. [PubMed Abstract](#) | [Publisher Full Text](#)

4. Patil CL, Turab A, Ambikapathi R, *et al.*: **Early interruption of exclusive breastfeeding: results from the eight-country MAL-ED study.** *J Health Popul Nutr.* 2015; **34**(1): 10.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
5. Bhutta ZA, Das JK, Rizvi A, *et al.*: **Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost?** *Lancet.* 2013; **382**(9890): 452–77.
[PubMed Abstract](#) | [Publisher Full Text](#)
6. Black RE, Allen LH, Bhutta ZA, *et al.*: **Maternal and child undernutrition: global and regional exposures and health consequences.** *Lancet.* 2008; **371**(9608): 243–60.
[PubMed Abstract](#) | [Publisher Full Text](#)
7. Roy MP, Mohan U, Singh SK, *et al.*: **Determinants of prelacteal feeding in rural northern India.** *Int J Prev Med.* 2014; **5**(5): 658–63.
[PubMed Abstract](#) | [Free Full Text](#)
8. Belachew AB, Kahsay AB, Abebe YG: **Individual and community-level factors associated with introduction of prelacteal feeding in Ethiopia.** *Arch Public Health.* 2016; **74**: 6.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
9. **National Family Health Survey (NFHS-3), 2005-06.** India: International Institute for Population Sciences; 2007.
[Reference Source](#)
10. Das A, Mahapatra S, Sai Mala G, *et al.*: **Association of Frontline Worker-Provided Services with Change in Block-Level Complementary Feeding Indicators: An Ecological Analysis from Bihar, India.** *PLoS One.* 2016; **11**(11): e0166511.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
11. Valadez JJ, Weld L, Vargas WV: **Monitoring community health workers' performance through lot quality-assurance sampling.** *Am J Public Health.* 1995; **85**(8 Pt 1): 1165–6.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
12. Das A, Chatterjee R, Karthick M, *et al.*: **The Influence of Seasonality and Community-Based Health Worker Provided Counselling on Exclusive Breastfeeding - Findings from a Cross-Sectional Survey in India.** *PLoS One.* 2016; **11**(8): e0161186.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
13. Das A: **Data for Exclusive breastfeeding - LQAS R2-R5.** 2018.
<http://www.doi.org/10.17605/OSF.IO/FM925>
14. Chandhiok N, Singh KhJ, Sahu D, *et al.*: **Changes in exclusive breastfeeding practices and its determinants in India, 1992–2006: analysis of national survey data.** *Int Breastfeed J.* 2015; **10**: 34.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)

Open Peer Review

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Reviewer Report 17 June 2019

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Anna Lartey 

Nutrition Division, Food and Agriculture Organization of the United Nations (FAO), Rome, Italy

No further comments.

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Maternal and infant nutrition

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.

Version 2

Reviewer Report 04 June 2019

<https://doi.org/10.21956/gatesopenres.14009.r27162>

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Anna Lartey 

Nutrition Division, Food and Agriculture Organization of the United Nations (FAO), Rome, Italy

This is an interesting analysis looking at the practice of prelacteal feeding in relation to EBF practice. Please find below the following edits:

Abstract:

- Under Methods line 3: Should be “Data ... were” not “data was”. (Plural for data.)

Conclusion:

- The study could couch a better conclusion than what is there. The recommendation that “the families practicing prelacteal feeding should be identified early and subjected to intensive counselling by FLWs” is not a practical recommendation and does not address the problem. A more reasonable concluding recommendation would be to intensify education to all would-be mothers, especially during pregnancy and to grandmothers about the harmful effects of prelacteal feeding for EBF and subsequently on infant health. Places of child birth - hospitals, clinics, community centres - and home birth attendants must be also be the target for education about the harmful effects of prelacteal feed.

Introduction:

- Paragraph 2: Suggest rewording “Providing prelacteal ... is an established practice and other developing countries”.
- Paragraph 3: It is surprising that you refer to EBF till the recommended age. Be precise here. EBF is recommended for 6 months.
- Last sentence, “EBF among 3 month old children ...”: Please replace “children” with “infants”.

Discussion:

- Paragraph 2, line 6: “Our findings suggest that the families proving ...” This is a typo. The word should be “providing”.
- Paragraph 3: Your concluding recommendation needs to be revised. Please see my earlier comments under Abstract and revise accordingly.
- Limitations: Please avoid using the term “economically backward region” - better to use “economically deprived region”.

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

Yes

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

Yes

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

Yes

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

Yes

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

Yes

Are the conclusions drawn adequately supported by the results?

No

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Maternal and infant nutrition

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.

Author Response 04 Jun 2019

Aritra Das, CARE India Solutions for Sustainable Development, Patna, India

Thank you Dr. Lartey for carefully reviewing the manuscript and for your valuable comments. As per your suggestion, we have made the following changes to the manuscript:

- In the first sentence of the 'Methods' section of the abstract, replaced 'was' with 'were'.
- In the 'Conclusion' section of the abstract, added the following sentence at the end – "*Delivery conductors at the public and private facilities as well as the home birth attendants should also be made aware about the negative effects of prelacteal feed*".
- In the first sentence of the second paragraph under 'Introduction', replaced 'custom' with 'practice' and 'nation' with 'countries'.
- In the second sentence of the third paragraph under 'Introduction', replaced 'till recommended age' with 'sixth month'.
- In the last sentence of the third paragraph under 'Introduction', replaced 'children' with 'infants'.
- In the second sentence of the second paragraph under 'Discussion', corrected the spelling error 'providing'.
- Added the following sentences at the end of the second paragraph of 'Discussion' section: "*Another important intervention would be to intensify health education of would-be mothers, especially during pregnancy, and other family members such as their mothers-in-law about the harmful effects of prelacteal feeding for EBF and subsequently on infant health. Targeted education on the same topic for midwives/nurses working at the public and private hospitals and birth attendants conducting home deliveries may also prove useful in reducing the practice of prelacteal feeding*".
- In the last sentence of the paragraph on 'Limitations' under 'Discussion' section, replaced 'backward' with 'deprived'.

We fully agree with your comment on educating the mothers and the delivery conductors (nurses/midwives/home birth attendants) regarding the harmful effects of prelacteal feeding and we have added the recommendation in the manuscript. However, we have also retained the initial recommendation regarding identification and counseling of the mothers by Frontline workers (FLW). This recommendation is very context-specific as FLWs play a crucial role in providing health services in the state of Bihar, which has long been plagued by a weak health system. Not only do they have the widest reach (as almost 40% deliveries in Bihar take place either at home or at private facilities - which often remain untouched by the public health system), the FLWs can easily be influenced by the existing system in performing the desired task of counseling the mothers/family members on harmful effects

of prelacteal feeding.

Competing Interests: The authors declare no competing interest.

Reviewer Report 04 March 2019

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Manas Roy 

Directorate General of Health Services, Ministry of Health and Family Welfare, New Delhi, India

No further comments to make. The changes are satisfactory.

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

No

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

No

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

No

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

No

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

No

Are the conclusions drawn adequately supported by the results?

No

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Maternal and child health

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.

Version 1

Reviewer Report 11 January 2019

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Manas Roy 

Directorate General of Health Services, Ministry of Health and Family Welfare, New Delhi, India

Comments

- It is not clear why first three days after birth were excluded from working definition of EBF.
- 4 clients from 19 centres in 137 blocks – makes it 10412. How did the authors reach 10392 as sample size?
- In the definition of eligible household, it should be clarified that presence of child from ANY of the age groups was sufficient.
- Details about study participants are missing.
- ICDS is to be expanded. A line or two explaining how integration works between ASHA and ANM.
- Discussion does not include factors associated with EBF.
- The study involved children aged 3 months. How did recall bias for data on EBF for 6 months come to picture?

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

Yes

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

Yes

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

Yes

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

Yes

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: Maternal and child health

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.

Author Response 11 Jan 2019

Aritra Das, CARE India Solutions for Sustainable Development, Patna, India

Dear Dr. Roy,

We express our sincere appreciation for your insightful comments. Please find below our responses to the queries posed by you:

It is not clear why first three days after birth were excluded from working definition of EBF. *The operational definition of prelacteal feeding considered in this study is: "Providing something other than breast milk to an infant during the first three days of life". As the association of prelacteal feeding (exposure in this context) has been tested with exclusive breastfeeding (the 'outcome'), we excluded first three days of life from 'outcome' definition in order to maintain the temporal association between exposure and outcome. In other words, had we considered first 3 days of life for exclusive breastfeeding, then any provision of prelacteal feeding would have automatically resulted in non-exclusive breastfeeding and we could not have tested for the concerned hypothesis.*

4 clients from 19 centres in 137 blocks – makes it 10412. How did the authors reach 10392 as sample size.

Thanks for pointing this out. We only considered the cases with complete information (for the parameters under consideration) for the analysis. For this reason, 20 cases had to be dropped as they had missing data for at least one or more variables. We will mention this in the .

In the definition of eligible household, it should be clarified that presence of child from ANY of the age groups was sufficient.

Thank you for the suggestion. We will include the statement in the revised manuscript.

Details about study participants are missing.

*We agree. We excluded the description in the current article as it has already been described in a previously published article (cited under 'Methods' - citation no. 12 - **Das A, Chatterjee R, Karthick M, et al.: The Influence of Seasonality and Community-Based Health Worker Provided Counselling on Exclusive Breastfeeding - Findings from a Cross-Sectional Survey in India. PLoS One. 2016; 11(8).**) . As per suggestion, we will add a sentence in the results section stating that the "characteristics of the study population has been described in a previous article".*

ICDS is to be expanded. A line or two explaining how integration works between ASHA and ANM.

Thank you for the suggestion. We will include the full form of ICD in the revision. We will also add the following sentence to describe the relationship between ASHA and ANM - "ASHA workers deliver various MNCH and immunization service at the village level. The Auxilliary Nurse Midwives or ANMs are the key health functionary at the Health Sub-centre (HSC) level (consisting of several villages) with a broad set of responsibilities, including the support, local supervision and capacity building of the ASHA and AWW working in respective HSC catchment areas".

The study involved children aged 3 months. How did recall bias for data on EBF for 6 months come to picture?

Although the study involved interviews with mothers of infants aged 0-2 completed months, there is unlikely to be any differential recall between mothers of neonates and those with older (up to 3 months old) infants. This is due to the fact that the data on EBF is based on 24 hours recall. Also, prelacteal feeding in rural Bihar is often based on family/social customs and the mothers are unlikely to forget the feeding given to their child during first few days of life. However, as per suggestion, we will include this caveat under Discussion section in the revised manuscript.

Competing Interests: No competing interests were disclosed.