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Breastfeeding Education Support Tool for Baby (BEST4Baby): Feasibility, Acceptability, and Preliminary Impact of an mHealth Supported Breastfeeding Peer Counselor Intervention in rural India

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ABSTRACT

Objective: To evaluate the feasibility of an mHealth-supported breastfeeding peer counselor intervention implemented in rural India and the preliminary impact of the intervention on maternal breastfeeding behaviors, including exclusive breastfeeding (EBF).

Methods: In this quasi-experimental pilot study, participants received either the intervention plus usual care (n = 110) or usual care alone (n = 112). The intervention group received nine in-home visits during and after pregnancy from peer counselors who provided education about and support for EBF and other optimal infant feeding practices and were aided with an mHealth tool. The control group received routine prenatal and postnatal health education. Progress notes and surveys were used to assess feasibility. Logistic regression models were used for between-group comparisons of optimal infant feeding outcomes, including EBF for 6 months.

Results: The intervention was delivered as intended, maintained over the study period, and had high acceptability ratings. There were statistically significant differences in all outcomes between groups. The intervention group had a significantly higher likelihood of EBF at 6 months compared to the control group (adjusted odds ratio 3.57, 95% confidence interval 1.80–7.07).

Conclusion: Integration of mHealth with community-based peer counselors to educate women about EBF is feasible and acceptable in rural India and impacts maternal breastfeeding behaviors.

INTRODUCTION

- In the first 6 months of life, nearly half of infants in India were not exclusively breastfed (2015-16 India National Family Health Survey)
- Peer counseling relies on local community women who have successfully breastfed, received training in breastfeeding education, and work with their peers to improve breastfeeding outcomes
- Insufficient evidence on community level peer counseling interventions significantly improve EBF rates in India

MATERIALS AND METHODS

- Quasi-experimental pilot study
- 6 different primary health centers (PHCs) located in rural communities of the Belagavi district of Karnataka, India
- Accredited social health activists (ASHAs) at five of the six study PHC sites used for recruitment
- 110 intervention group participants
- Peer counselors were supported by a mHealth application (app) - Breastfeeding Education Support Tool for Baby (BEST4Baby)
- Visits occurred when the participants were: 28–32 weeks gestation; 32–36 weeks gestation
- Eligibility criteria included: (1) breastfeeding experience; (2) conversant in the local language; (3) minimum of 10 years of education; (4) residing in the local community; and (5) familiarity with the use of a smart phone and apps.
- Five areas of feasibility of implementing the intervention were assessed: acceptability, implementation, practicality, adaptation, and efficacy
- System Usability Scale (SUS), a tool used to measure and quantify the perception of usability of products and services

RESULTS

Intervention implementation:

- Peer counselors initially needed support from the research team in troubleshooting specific aspects of the app
- Reports of limited internet access, but this was addressed by having app content available offline

Peer counselors

- The post-training SUS usability score for the peer counselors ranged from 72.5 to 100
- The average score was 87.5 (SD 8.2) suggesting high usability and implementation practicality
- 25 counselors did not continue as peer counselors after the training

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Characteristic	Total N = 222 n (%)	Intervention N = 110 n (%)	Control N = 112 n (%)	p value
Age (years), mean (SD)	24 (3.7)	23.2 (3.5)	24.7 (3.5)	0.004
Highest level of education				
Illiterate	9 (4)	4 (4)	5 (4)	0.254
Primary	25 (11)	15 (14)	10 (9)	
Secondary/pre-university	155 (41)	70 (64)	85 (76)	
Graduation/post-graduation	31 (14)	19 (18)	12 (11)	
Occupation				
Housewife	212 (96)	102 (94)	110 (98)	0.098
Non-housewife	9 (4)	7 (6)	2 (2)	
Occupation of husband				
Skilled	153 (69)	103 (94)	50 (45)	<0.0001
Not skilled	69 (31)	7 (6)	62 (55)	
Number of previous children				
0	97 (43)	55 (50)	42 (37)	0.171
1	86 (39)	38 (35)	48 (43)	
2 or more	39 (18)	17 (15)	22 (20)	
Place of delivery				
Community Health Center	25 (11)	21 (19)	4 (4)	<0.0001
District Hospital	52 (23)	16 (14)	36 (32)	
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Mode of delivery				
Vaginal	147 (66)	77 (70)	70 (63)	0.237
Cesarean	75 (34)	33 (30)	42 (37)	
Infant birthweight, g				
2001–2500	39 (17)	17 (15)	22 (20)	0.250
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Infant sex				
Female	109 (49)	55 (50)	54 (48)	0.790
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Abbreviation: SD, standard deviation.

TABLE 2 Association between infant feeding outcomes and study group

Outcome	Total N = 222 n (%)	Intervention N = 110 n (%)	Control N = 112 n (%)	p value	OR (95% CI)	AOR (95% CI)[a]
Exclusive breastfeeding[b]	108 (49)	70 (64)	38 (34)	<0.0001[c]	3.41 (1.96–5.91)	3.57 (1.80–7.07)
Timely breastfeeding initiation[d]	153 (69)	90 (82)	63 (56)	<0.0001[c]	3.50 (1.89–6.45)	4.82 (2.13–10.90)
Colostrum given to infant	215 (97)	110 (100)	105 (94)	0.014[e]	—[f]	—[f]
No prelacteal feeding[b]	201 (90)	107 (97)	94 (84)	0.0009[e]	6.83 (1.95–23.92)	10.2 (2.54–40.71)
No top-feeding[b]	185 (83)	101 (92)	84 (75)	0.0008[c]	3.74 (1.67–8.36)	4.53 (1.80–11.37)
No supplementary feeding[b]	142 (64)	82 (74)	60 (54)	0.001[c]	2.54 (1.44–4.48)	2.24 (1.12–4.47)

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval; OR, odds ratio.
[a]Model adjusted for maternal age, parity, mode of delivery, place of delivery, and husband's occupation.
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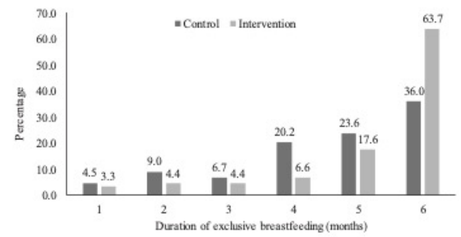

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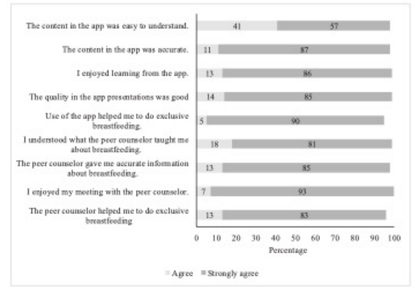

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DISCUSSION

- The low prevalence of EBF in the control group and high prevalence of EBF in the intervention group confirm the need for community-based peer sup- port to promote breastfeeding in rural India
- Feasibility of the intervention was determined by high retention rates of peer counselors and participants, addressable implementation problems, and high acceptability ratings
- No assessment has been made of the use of mobile technologies to enhance breastfeeding peer counseling programs in India
- mHealth apps can be adapted to local cultures and peer counselors can be easily trained to work with these technologies
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- Between- group differences suggest that the intervention influenced multiple infant feeding decisions and behaviors from after birth through 6 months postpartum.

Limitations:

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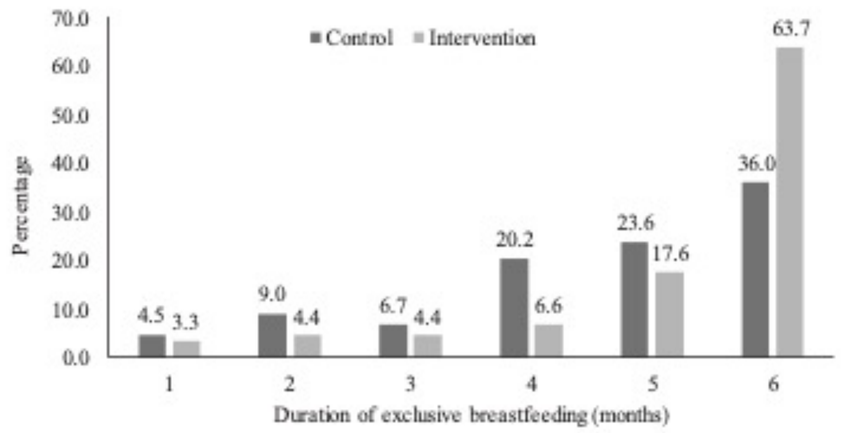

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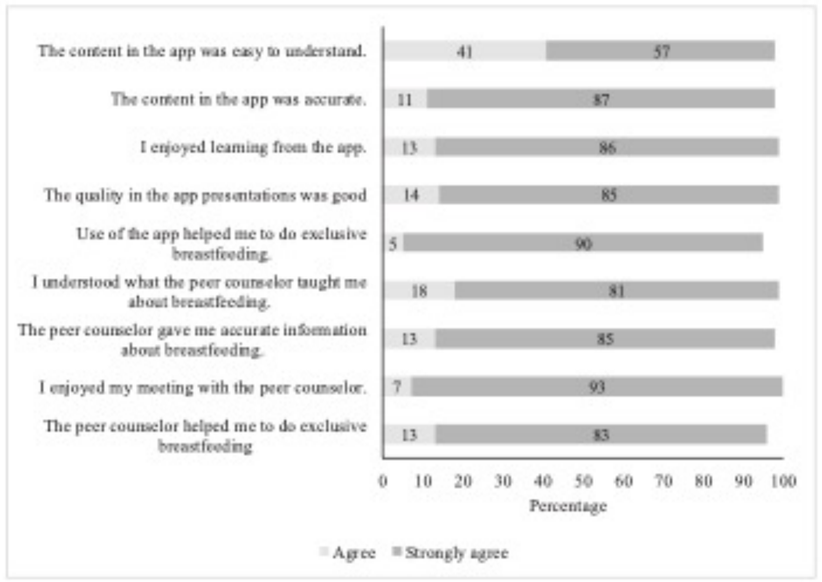

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Feasibility, acceptability, and preliminary impact of an mHealth supported breastfeeding peer counselor intervention in rural India

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