INTERVENTIONS TO IMPROVE BREASTFEEDING OUTCOMES: A SYSTEMATIC REVIEW AND META-ANALYSIS

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ABSTRACT

Aim

To provide comprehensive evidence of the effect of interventions on early initiation, exclusive, continued and any breastfeeding rates when delivered in five settings: (i) Health systems and services (ii) Home and family environment (iii) Community environment (iv) Work environment (v) Policy environment or a combination of any of above.

Methods

Of 23977 titles identified through a systematic literature search in PUBMED, Cochrane and CABI, 35 articles relevant to our objective, were included. We reported the pooled relative risk and corresponding 95% confidence intervals as our outcome estimate. In cases of high heterogeneity, we explored its causes by subgroup analysis and meta-regression and applied random effects model.

Results

Intervention delivery in combination of settings seemed to have higher improvements in breastfeeding rates. Greatest improvements in early initiation of breastfeeding, exclusive breastfeeding and continued breastfeeding rates, were seen when counselling or education were provided concurrently in home and community, health systems and community, health systems and home settings, respectively. Baby friendly hospital support at health system was the most effective intervention to improve rates of any breast feeding.

Conclusion

To promote breastfeeding, interventions should be delivered in a combination of settings by involving health systems, home and family and the community environment concurrently.

***Keywords**: Meta-analysis, Nursing interventions, Maternal health, Child health, India.*

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INTRODUCTION

The promotion of optimal breastfeeding practices is fundamental to ensuring child survival, nutrition, and early childhood development. Both the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) advocate for the initiation of breastfeeding within the first hour of birth, exclusive breastfeeding for the first 6 months of life, and continued breastfeeding for at least 2 years or more, alongside the introduction of nutritionally adequate and safe complementary foods (1). These recommended practices are incredibly crucial, as they have the potential to prevent approximately 12% of deaths in children under five annually, which in 2013 would have equated to saving around 800,000 lives in low and middle-income countries (2). Beyond the immediate health benefits, optimal breastfeeding practices also foster strong mother-infant bonding, support optimal growth and development, offer protection against non-communicable diseases, and promote maternal health (3,4). According to a report by the World Health Organization (WHO) focusing on 47 out of 75 countdown countries, the median coverage of exclusive breastfeeding has seen a modest increase from 34% in the period of 2000-2007 to 41% in 2008-2012 (8). Enhancing breastfeeding rates is crucial for achieving the unmet goals of Millennium Development Goal 4 and necessitates immediate attention (9). The Comprehensive Implementation Plan for Maternal, Infant, and Young Child Nutrition aims to raise the rate of exclusive breastfeeding in the first 6 months of life from the current 40% to at least 50% by 2025 (10).

Effective breastfeeding promotion interventions, encompassing a range of protection, promotion, and support measures, are essential to empower and assist mothers in overcoming breastfeeding challenges. Interventions such as the Baby-Friendly Hospital Initiative, peer counselor support through home visits and telephonic assistance, group counseling, community awareness campaigns, health program strategies like Integrated Management of Childhood Illness (IMCI), and policies such as the WHO Code of Marketing of Breast Milk Substitutes have been shown to be effective in enhancing breastfeeding rates in various studies (14).

Numerous systematic reviews have examined the impact of specific interventions on breastfeeding rates. These include antenatal education (20), lactation counseling by counselors or healthcare professionals (7), telephone support (8), peer support (), and workplace support (21). Other reviews have focused on interventions in specific settings such as the community (13) or primary healthcare (14). Recent reviews that pooled studies on educational interventions have demonstrated a significant improvement in exclusive breastfeeding rates with these interventions (16).

METHODS

We searched for existing systematic reviews, particularly Cochrane reviews, on the effects of interventions on breastfeeding outcomes. As the scope of our objective was wider than previous reviews, we planned for a new review. Review authors screened the titles and abstracts independently to identify potentially relevant citations. They retrieved the full texts of all potentially relevant articles and independently assessed eligibility of the studies using pre-defined inclusion criteria (17). Data extraction was done for all the articles which were found to be relevant. Any disagreements or discrepancies between reviewers were resolved by discussion and, if necessary, by consulting a third review author (JSM). In addition to theelectronic search, we reviewed the reference lists of the articles identified. We used web-based citation index for citing manuscripts of these identified articles.

INCLUSION CRITERIA

Our inclusion criteria encompassed randomized controlled trials (RCTs), including cluster randomized trials, quasi-experimental trials, and observational studies (prospective/retrospective cohort and case-control). We included all studies focusing on interventions to enhance breastfeeding that were administered to mothers during the antenatal or postnatal period, or both. Additionally, studies were included if the interventions to improve breastfeeding were targeted at families, communities, healthcare staff, and other stakeholders. For articles in languages other than English, we made efforts to determine if the abstract was available in English.

RESULTS

Subgroup	No. of estimates	Pooled odds ratio and 95% confidence interval	I2 (%)	Meta-regression p value
All interventions	49	1.25 (1.19–1.32)	90.6	-
Intervention delivery setting				
- Health systems and services	29	1.11 (1.06; 1.16)	88.2	0.534
- Home and family environment	5	1.74 (0.97; 3.12)*	93.8	-
- Community environment	5	1.86 (1.33; 2.59)	69.3	-
- Combination of settings	10	1.57 (1.24; 1.97)	86.8	-
- Health system + Home	6	1.36 (1.07; 1.73)	79.1	-
- Home + Community	3	1.85 (1.08; 3.17)	91.1	-
- Health system + Community	1	2.09 (1.64; 2.67)	-	-
Study size				
- <500 participants	26	1.30 (1.18; 1.44)	86.2	0.871
- 500–1499 participants	11	1.48 (1.24; 1.75)	92.1	-
- ≥1500 participants	12	1.10 (1.03; 1.18)	93.8	-
Country type				
- High income	31	1.13 (1.07; 1.19)	88.0	0.046
- Lower mid income Urban/Rural	18	1.66 (1.44; 1.91)	92.8	-
- Urban	27	1.24 (1.13; 1.36)	87.9	0.773
- Rural	8	1.72 (1.26; 2.36)	94.1	-
- Combined	1	1.35 (1.05; 1.73)	-	-
Study design				
- RCT	12	1.48 (1.23; 1.79)	94.0	0.835
- Observational	15	1.20 (1.11; 1.30)	91.3	-
- Quasi experimental	22	1.19 (1.10; 1.29)	85.7	-
Control for confounding				
- Yes	73	1.25 (1.18; 1.32)	92.8	0.930
- No Quality of study	57	1.26 (1.12; 1.42)	84.6	-
Adequate	27	1.19 (1.13; 1.26)	91.4	0.283
Inadequate	22	1.36 (1.19; 1.55)	89.2	-

For promoting early initiation of breastfeeding, counselling or educational interventions delivered at home and in the community were identified as the most effective (85% increase) and should be prioritized. Counselling as a single intervention in the community environment was also effective but had a lesser impact on breastfeeding initiation. This aligns with findings from, indicating that counselling by health staff only at home had no significant effect on breastfeeding initiation. This suggests the importance of community-wide awareness in addition to educating individual mothers.

In terms of promoting exclusive breastfeeding, counselling or education in both the health system and community settings were found to be the most effective (increase by 152%) among the interventions studied. While individual interventions, such as counselling in health systems or communities, showed a significant but lower impact on exclusive breastfeeding rates, the combination of these interventions had a synergistic effect. This finding is consistent with a review, which found that combined facility and community-based interventions led to greater improvements in breastfeeding rates. Similarly, interventions delivered in both health systems and home settings had a greater impact on exclusive breastfeeding rates compared to when delivered in individual settings alone. Surprisingly, family or social support was found to have no significant effect on promoting exclusive breastfeeding.

DISCUSSION

The systematic review findings affirm the effectiveness of complex adaptive systems-driven models such as the 'Breastfeeding Gear Model', which advocate for the involvement of various sectors and stakeholders to ensure well-coordinated efforts in promoting optimal breastfeeding practices worldwide. Based on these findings, it can be inferred that to promote breastfeeding optimally in expectant or nursing mothers, support should be provided across multiple settings. This includes increasing community awareness about breastfeeding, providing hospital or health system support through the Baby-Friendly Hospital Initiative (BFHI) approach, and offering home and family support through counseling. Key interventions for promoting optimal breastfeeding practices include counseling by peers or health personnel, support from baby-friendly hospitals, and community mobilization approaches. We therefore recommend a multidimensional approach to enhance breastfeeding interventions.

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