

# Role of mass media in increasing knowledge and practices of mothers on IYCF: Findings from a community trial in rural Bangladesh

Saidur Rahman Mashreky<sup>1</sup>, Fazlur Rahman<sup>2</sup>, Aminur Rahman<sup>3</sup>, Abu Talab<sup>4</sup>, Zakia Rahman<sup>5</sup>

<sup>1</sup>Associate Professor, Department of Epidemiology, Bangladesh University of Health Sciences (BUHS) & Director, Centre for Injury Prevention and Research, Bangladesh (CIPRB). <sup>2</sup>Professor and Head of Department of Epidemiology, Bangladesh University of Health Sciences (BUHS) & Executive Director, Centre for Injury Prevention and Research, Bangladesh (CIPRB). <sup>3</sup>Director; <sup>4,5</sup>Statistician; Centre for Injury Prevention and Research, Bangladesh (CIPRB), Dhaka, Bangladesh.

## Abstract

Poor IYCF (Infant and Young Children Feeding) practices are factors of poor nutrition among infants and young children in developing countries including Bangladesh. To address this problem, a national mass media campaign was launched using television channels along with home counseling. The study was designed to explore the effect of IYCF intervention on changing knowledge and practices of mothers in rural Bangladesh. The study used a cluster randomized trial design where six unions were randomized to allocate them to 'only mass media intervention (intervention-I)' or 'mass media + direct counseling (Intervention-II)'. Three unions were subjected to 'intervention-I' and the other three were subjected to 'intervention-II'. In intervention-I areas, the knowledge of initiation of breast feeding was improved by 8.5% and practice was improved by 23.7%. It was 17.9% and 16.6% respectively in intervention-II areas. In intervention-I areas knowledge about initiation of complementary feeding improved by 2.7% and in practice it was 19.3%. In intervention-II areas it was 8.6% and 21.3% respectively. Regarding giving the right quantity of complementary food, in intervention-I areas the improvement rate was 6.2% for children between 7-8 months old and 34% for children between 9-12 months old. In intervention-II areas it was 13.7% for children between 7-8 months old and 56.8% for children between 9-12 months old. Significant improvements were found in both the intervention areas, but changes were almost similar in both groups. Coverage of interpersonal communication was found to be very low. Improvement of IYCF knowledge and practice might be the contribution of mass media.

**Keywords:** IYCF, Mothers' Knowledge and practice, Mass Media, Home counseling, Bangladesh.

## Introduction

Two out of every five young children are currently undernourished in Bangladesh<sup>1</sup>, despite improving food availability and a reduction in poverty levels.<sup>2</sup> Health interventions have succeeded in increasing the number of children who survive at least until five years of age.<sup>1,3</sup> But a large percentage of the survivors will not reach their full mental and physical potential due to the lack of nutrition during the first two years of life. Poor feeding habits, particularly insufficient breastfeeding and inadequate quantity and quality of complementary feeding, are at the root of poor nutrition among infants and young children in developing countries including Bangladesh.<sup>4</sup> To address this problem, the Government of Bangladesh launched a national mass media campaign using the most widely viewed television channels and programs in the country at the end of 2010 and also encouraged government and non-government health workers to directly support mothers to breastfeed properly and provide adequate complementary feeding.<sup>5,6</sup>

The national IYCF campaign reported in this paper attempted to address common gaps and concerns among mothers in Bangladesh through mass media as well as through direct support provided by health workers. If

## Practice Points

- Poor feeding habits, particularly insufficient breastfeeding and inadequate quantity and quality of complementary feeding, are at the root of poor nutrition among infants and young children in developing countries including Bangladesh.
- Using television channels the Government of Bangladesh launched a national mass media campaign to improve mothers' knowledge and practice in relation to breastfeeding and complementary feeding.
- Mass media was found as an effective intervention method, improving the knowledge and practices of mothers on IYCF.
- It was also noted that the coverage of interpersonal communication was very low.
- Mass media campaign can be continued as intervention programs for IYCF practices of mothers.

**Correspondence:** Dr. Saidur Rahman Mashreky, Director, Centre for Injury Prevention and Research, Bangladesh (CIPRB), House B-162; Road 23, New DOHS, Mohakhali, Dhaka-1206, Bangladesh. Email: [mashreky@ciprb.com](mailto:mashreky@ciprb.com).

successful, mass media can be a highly cost-effective channel in large population countries such as Bangladesh, where exposure to mass media now covers the majority of the urban and rural populations.<sup>7</sup>

There are evidences that exposure to mass media can fill critical knowledge gaps in public health programs such as HIV, family planning and immunization.<sup>8,9</sup> Campaigns to promote breastfeeding, but not complementary feeding were implemented in several countries once the public health importance of breastfeeding was clearly established.<sup>10</sup> The campaigns addressed knowledge gaps and perceptions such as 'insufficient milk' that were shown in diverse cultural and development settings to influence breastfeeding practices.<sup>11,12</sup> Program evaluations have shown how programs to improve health services such as the Baby Friendly Hospital Initiative (BFHI) can improve breastfeeding practices.<sup>13</sup> However, only a few well documented studies are available on the impact of mass media on IYCF.<sup>14,15</sup> The overall objective of this study was to assess the impact of an intervention program on change in knowledge and practice of mothers in relation to IYCF.

## Materials and Methods

### Study sites

The study has been conducted in Companiganj and Bishwanath upazilas (sub district) of Sylhet district in Bangladesh. These upazilas are typical rural areas of Bangladesh.

### Study design

The study used a cluster randomized trial design. Six unions (three from Companiganj and three from Bishwanath upazilas of Sylhet district) were randomized to allocate them to either "only mass media intervention (Intervention-I)" area or 'mass media plus direct counseling (intervention-II)' by health workers and volunteers area. A union is considered as a cluster and this geographical area is the smallest administrative unit consisting of ~ 30,000 population) Three unions were in the mass media only (intervention-I) group and three were in the mass media plus direct counseling (intervention-II) group.

### Study population

Mothers/caregivers of 0-12 months old children and family members were the study population in this study.

### Sampling

There were two considerations in estimating the required sample size. One was to attain a sample size large enough to give statistically valid estimate for coverage, knowledge and practice indicators and the other was to estimate the differences in outcomes of the intervention.

This resulted in an estimate of 287 mothers having 0-6 month old children and 210 mothers having 7-12 months old children per group. This was adjusted upwards to 300 mothers having 0-6 months old child and 230 mothers having 7-12 months aged child per

group, thus resulting in a total sample size of 1060 for both intervention areas.

To select samples for the baseline and end line surveys, a rapid census was conducted in each union to identify mothers having 0-12 months old children. A sampling frame of 4627 mothers of 0-12 months old children from both areas was developed at baseline, and 4846 mothers at end line. Then by simple random sampling method 1065 mothers were selected for the baseline survey and 1059 for the end line survey.

### Interventions

#### (a) Intervention I- Mass media only:

Based on formative research conducted in 2009, a behavior change strategy using multiple communication channels was selected to improve certain infant and young child feeding practices that have highest potential for health impact in Bangladesh.<sup>5</sup>

Six TV spots were developed after audience pre-testing on culturally acceptable and high need topics such as: timing of breastfeeding initiation, exclusive breastfeeding for six months, misperception of 'insufficient breast milk', quantity and frequency of complementary feeding, variety of foods particularly animal foods, poor appetite and father's support. The life-saving benefits of breastfeeding and importance of IYCF for brain development were emphasized in the TV stories. The frequency of airings ranged from six to 24 times per day on two of the most popular national channels during drama serials, Bangla films and news shows.

#### (b) Intervention II - Mass media and interpersonal counseling:

For direct counseling, government and NGO health workers and volunteers in the study area were trained in breastfeeding position and attachment, and food selection and responsive feeding for complementary feeding. Counseling techniques were a part of the training that was given through practical hands-on sessions followed by supervised field practice. Frontline workers were supervised using an observation checklist. Unpaid volunteers identified from community groups were asked to make monthly home visits and government health workers conducting home visits for family planning were asked to provide IYCF counseling at specific ages. Mass media was launched in December 2010 and is still ongoing, and the direct counseling activities started in September 2011 and ended in April 2012.

### Measurement of outcomes

#### (a) Baseline and End line survey

Cross-sectional surveys were conducted with the mothers/caregivers of 0-12 months old children at baseline and at the end of one year intervention. The surveys were conducted to obtain the information related to perceptions and practices of exclusive breastfeeding, complementary feeding, hand washing, and exposure to interventions. Baseline survey was conducted in May-

June 2011 and the end line data collection (post-implementation) was conducted in April - July 2012.

In the baseline survey, a total of 529 mothers were selected for mass media alone intervention (intervention-I) and 536 mothers were selected for mass media plus direct counseling intervention (intervention-II). Among the 1065 mothers in the baseline, 601 mothers had children of 0-6 months and 464 mothers had children of 7-12 months. In end line survey among the 1059 mothers, 599 mothers had children of 0-6 months and 460 mothers had children of 7-12 months. Data were collected through face-to-face interviews using a structured pre-tested questionnaire at household level. Six supervisors supervised the activities of the 30 data collectors. Data collectors were blinded to the study areas. Questions about IYCF practices followed the standard WHO and DHS protocols of asking what the child was fed the previous day.<sup>1,16</sup> Intervention variables were based on recall about home visits for IYCF counseling, recall of TV spots, and participation in group meetings in the past 30 days.

#### (b) Outcome measures

Knowledge and practice of mothers related to breastfeeding, complementary feeding, and hand washing were the outcome measures of this study. In exploring the knowledge the mothers were asked, when a mother should initiate breast feeding and until what age a child should be fed only breast milk. The knowledge on breastfeeding was considered correct when a mother could mention that breastfeeding should be initiated within 1 hour of birth, and exclusive breastfeeding to be continued until 180 days.

They were also asked about quantity and frequency of complementary feeding in a day according to the age of children. Correct knowledge was considered when response regarding quantity of complementary feeding was 250ml in day for children of 7-8 months, 375ml in day for children of 9-12 months and 750 ml in day for children of 13-24 months and it was, 2 times in a day for children of 7-8 months, 3 times a day for children of 9 months and above.

In measuring the practice about exclusive breast feeding and complementary feeding, we took history of meal in last 24 hours. In measuring practice related to initiation

of breast feeding a mother was asked when she started breastfeeding to her child.

All of these outcome indicators were measured at the base line and end line of the intervention. The measures were compared with the specific intervention components especially with mass media communication and direct counseling components.

#### Analysis Plan

Descriptive statistics including proportions for key indicators, calculation of differences between baseline and end line values and RRs were calculated. Changes of knowledge and practice related breast feeding and complementary feeding were compared between baseline and end line data according to type of intervention.

#### Ethical considerations

The ethical clearance for the study was obtained from the CIPRB Ethical Review Committee. A consent form was developed and utilized for each of the interview. Verbal consent was taken from each the respondents. Verbal consent form was approved by Ethical Review Committee. Anonymity of each interviewee was strictly maintained. The participants of the study were informed that the collected data would be used for the research only.

## Results

The two intervention groups were similar in socio-demographic characteristics. Both of the intervention areas were exposed to mass media communication (Table 1). There were six TV advertisements on different issues of IYCF. In both areas mothers watched those advertisements in varying proportion. Home counseling was only in the intervention-II area (mass media+). However, compliance to home counseling was very poor. Only 19 percent mothers were exposed to home counseling at the end line survey.

After one year of intervention in intervention-I (mass media only) area improvement of right knowledge about initiation of breast feeding was 8.5% (RR 1.08; 95% CI 1.04-1.13) and in practice it was 23.7% (RR 2.03; 95% CI 1.54-2.67) (Table 2). Improvement in both knowledge and practice was found statistically

**Table 1:** Compliance of interventions by intervention area

Interventions	Intervention-I (Mass Media only)		Intervention-II (Mass media+)	
	Baseline (%) (N=529)	End line (%) (N=533)	Baseline (%) (N=536)	End line (%) (N=536)
Home visit	15.1	10.7	17.4	19.4
TVC1-initiation of breast feeding	35.9	50.8	38.1	46.7
TVC2- Exclusive Breast feeding	34.4	48.3	36.4	46.6
TVC3-Father's support	25.0	31.2	24.4	33.8
TVC4- Animal Protein	33.3	53.9	36.8	51.5
TVC5- complementary feeding quantity and frequency	28.7	45.2	25.9	44.3
TVC6- How to child Feed	34.8	48.9	32.1	47.3

**Table 2:** Knowledge and practice of mothers on breast feeding and complementary feeding in Intervention-I area (Mass Media only)

Indicators	Base line (N=529)	end line (N=532)	Change %	Relative Risk with 95% CI
Correct knowledge about initiation of BF	87.1%	94.5%	8.5%	1.08 (1.04-1.13)
Correct practice about initiation of BF	62.2%	76.9%	23.7%	2.03 (1.54-2.67)
Correct knowledge about exclusive BF	85.1%	87.2%	2.5%	1.03 (.98-1.08)
Correct practice about exclusive BF	61.8%	69%	11.7%	1.12 (0.99-1.26)
Correct knowledge about Introduction CF	86%	88.3%	2.7%	1.03 (0.98- 1.08)
Correct practice about Introduction CF	46.9%	55.9%	19.3%	1.19 (1.02-1.40)
Right quantity of CF given to 7-8 months child	30.1%	32%	6.2%	1.09 (0.53-2.26)
Right quantity of CF given 9-12 months child	14.5%	19.5%	34.7%	1.43 (0.75 – 2.73)

significant. In relation to exclusive breast feeding, improvement of knowledge was 2.5% and it was 11.7% for exclusive breast feeding practice. However this improvement was not statistically significant. Knowledge and practice of mothers related to initiation of complementary feeding was found better at the end line survey in intervention area-I (mass media only). Right knowledge related to initiation of complementary feeding had improved by 2.7% (RR 1.03; 95% CI 0.98-1.08) and practice had improved by 19.3% (RR 1.19; 95% CI 1.02-1.40). Regarding giving right quantity of complementary feed, better practice was observed at the end line. The improvement rate was 6.2% (RR 1.09; 95% CI 0.53-2.26) for 7-8 months children and 34% (RR 1.43; 95% CI 0.75–2.73) for 9-12 months children. Huge gap was found between knowledge and practice in related to initiation of breast feeding, exclusive breast feeding and complementary feeding.

One year after intervention at the end line survey in the intervention-II area (mass media+) significant improvement of mothers' knowledge and practices was observed in relation to initiation of breast feeding. At knowledge level improvement was 17.9% (RR 1.18; 95% CI 1.13-1.24) and at practice level it was 16.6% (RR 1.77; 95% CI 1.13-1.24) (Table 3). Regarding exclusive breast feeding at knowledge level improvement was 3.2 % (RR 1.03; 95% CI 0.99-1.08) and at practice level it was 7.5% (RR 1.08; 95% CI 0.98 - 1.18). However changes were not statistically significant. Regarding gap found between knowledge and practice, about 20% less practice was found compared to knowledge related to initiation and exclusive breast feeding.

**Table 3:** Knowledge and practice of mothers breast feeding and complementary feeding in Intervention-II area (Mass media + direct counseling)

Indicators	Base line (N=536)	End line (N=536)	% change	Relative Risk with 95% CI
Correct knowledge about initiation of BF	80.2%	94.6%	17.9%	1.18 (1.13-1.24)
Correct practice about initiation of BF	67.4%	78.5%	16.6%	1.77 (1.34- 2.36)
Correct knowledge about exclusive BF	86.6%	89.4%	3.2%	1.03 (0.99-1.08)
Correct practice about exclusive BF	70.7%	76%	7.5%	1.08 (0.98- 1.18)
Correct knowledge about Introduction CF	82.6%	89.7%	8.6%	1.09 (1.03 - 1.14)
Correct practice about Introduction CF	46.1%	55.9%	21.3%	1.21 (1.04-1.42)
Right quantity of CF given to 7-8 months child	31.6%	35.9%	13.7%	1.21 (.59 -2.50)
Right quantity of CF given 9-12 months child	19.4%	30.4%	56.8%	1.82 (1.05-3.15)

Regarding initiation of complementary feeding improvement of knowledge was 8.6 % (RR 1.09; 95% CI 1.03-1.14) and improvement in practice was 21.3% (RR 1.21; 95% 1.04-1.42). Improvement in knowledge and practice was found statistically significant compared to baseline. Regarding giving right quantity of complementary food 13.7% (RR 1.09 95% CI 0.53-2.26) improvement was observed in relation to 7-8 months children and 56.8% (RR 1.82; 95% CI 1.05-3.15) in relation to children 9-12 months old.

Similar strength of association with IYCF knowledge and practice of mothers in two different interventions was found similar.

#### *Association of Media with IYCF practice*

We explored the relationship between media exposure and IYCF practice of mothers. Better knowledge and practice was observed among the mothers who were exposed to TV commercial. Mother who have seen and can recall at least two facts were defined as exposed group.

Exclusive Breast Feeding (EBF) rate was 73.8% and 65.9% among the mother who were exposed and not exposed to TV commercial on EBF & initiation of Breast Feeding (IBF). The difference was found statistically significant ( $p=0.006$ ). After confounding the effect of home visit, mother's education, father's occupation, significant effect of media was observed in relation to EBF practice (RR 1.46 95% CI 1.11-1.91) (Table 4).

**Table 4:** Effect of Media on EBF practice and EIBF knowledge after adjusting home counseling, father occupation and mother education

Indicators	Exclusive Breast Feeding Practice				Early Initiation of breast feeding knowledge			
	<i>p</i>	Exp (B)	95% C.I. for EXP (B)		<i>p</i>	Exp (B)	95% C.I. for EXP (B)	
			Lower	Upper			Lower	Upper
Home Visit	0.053	1.415	0.996	2.012	0.101	1.431	0.932	2.198
Father Occupation	0.606	1.075	0.816	1.416	0.34	0.856	0.622	1.178
Mother Education	0.438	0.898	0.685	1.178	0.02	1.411	1.057	1.884
TVC related to breast feeding	0.007	1.455	1.109	1.909	0	1.973	1.413	2.754
Constant	0	1.871			0	5.787		

Right knowledge about IBF was found 94.1% and 85.3% among exposed and unexposed mothers respectively. Difference was found statistically significant ( $p=0.00$ ). After confounding the effect of home visit, mother's education, father's occupation, logistic regression analysis shows significant association between TV exposure and right knowledge of IBF (RR 2.51, 95% CI 1.58-4.0) (Table 4).

Initiation of complimentary feeding was found better who have exposed to TV commercial however difference was not found statically significant. Initiation of complimentary feeding at right time was 67% and 57.4% among exposed and unexposed mothers respectively.

## Discussion

The study was designed to measure the effect of IYCF intervention on mother's knowledge and practice in rural Bangladesh. Two different interventions were put into operation in two different intervention areas. Only mass media communication (Intervention-I) was one intervention and mass media plus interpersonal communication (Intervention-II) was the other. Mother's knowledge and practices in relation to IYCF were the outcome indicators. After a yearlong intervention, at the end line survey we found significant improvement in IYCF knowledge and practice of mothers and improvement was found almost similar in both the of the intervention areas.

Baseline survey was conducted in both the intervention areas during May-June 2011. However direct counseling started in intervention-II area in September 2011 and it ended in April. On the other hand mass media intervention started in December 2010 and it was ongoing during end line survey. The end line survey was conducted in April 2012. Compared to interpersonal communication mass media had greater time to create its impact. Direct counseling had only 8 months duration. Short period of exposure to direct counseling might be a reason of not creating significant impact on knowledge and practices of mothers. On the other hand compliance of home visit was not satisfactory. Only about 19% mothers were exposed to home visits. This lower exposure might be another reason of lower contribution in changing

knowledge and practices of mothers. Further study can be undertaken to explore the cause of lower compliance of home visit. In this study we did not observe the practice of mothers. Practice information was obtained from statement of mothers during face to face interview.

At end line survey we found significant improvement of knowledge and practice of mothers in relation to early initiation of breast feeding in intervention-II area, where mothers were exposed to both mass media and interpersonal communication by home visit. However, almost similar improvement was observed in the intervention-I area, where mothers were exposed only to mass-media communication. This suggested that only mass media had significant contribution in improving both knowledge and practice of early initiation of breast feeding.

Like early initiation of breast feeding, improved knowledge and practices of mothers related exclusive breast feeding was observed at the end line survey in both the intervention areas. Strength of association was not found much different in two different intervention areas. This finding also suggested that mass media had impact in changing knowledge and behavior of mothers related to exclusive breast feeding. Effect of mass media in breast feeding campaign is found effective in other studies. A six-week breast-feeding campaign in Trinidad showed a significant increase in knowledge that was related to frequent exposure and a positive correlation was observed between avoidance of bottle feeding before 2 months of age and maternal familiarity with the campaign's media message.<sup>14</sup> In Jordan the practice of timely initiation increased significantly from 40% to 54% and knowledge about initiation increased from 51% to 75% after a breastfeeding campaign where changes in hospital practices accompanied mass media broadcasts in 1989 and 1990.<sup>15</sup>

After one year of intervention, knowledge and practice of mothers related to introduction of complementary feeding was improved in both of the intervention areas and improvement was not much different in two areas. Regarding quantity of complementary food improvement in practice was observed in both the areas and changes were similar in two areas.

Persistent positive effect of mass media was observed both in knowledge and practice of mother in relation to IYCF. The findings of this study affirmed that mass media alone had positive contribution on knowledge and practice of mothers regarding IYCF. We haven't found many researches in relation the effect of media on IYCF knowledge and practice, however, it was observed that mass media had effect on other health interventions. In Australia TV advertising campaigns were found effective in smoking prevention initiatives.<sup>17</sup> In promotion of HIV testing in diagnosis of HIV, mass media was found as a very effective communication channel.<sup>18</sup> Mass media was found to be effective in changing smoking behavior.<sup>19</sup>

## Conclusion and recommendations

Significant improvement was found in IYCF knowledge and practices of mothers both in the Interpersonal communication + Mass Media and Mass media only intervention areas. Changes were almost similar in two areas. Coverage of interpersonal communication was found very low. Improvement of IYCF knowledge and practice might be the contribution of Mass media. It suggests mass media has relationship in improving knowledge and practice of mothers in relation to Infant and Young Children Feeding.

## Competing interest

The authors declare that they have no competing interests.

## Authors' contributions

FR analyzed and interpreted data and helped to draft the manuscript, co-authored the paper. AR reviewed the final draft of the manuscript, co-authored the paper. ZR and AT help in field management and data management co-authored the paper. SRM wrote the manuscript and prepared the manuscript for submission to the journal. All authors read and approved the final manuscript.

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