

**Promoting health knowledge through micro-credit programs:
experience of BRAC, Bangladesh**

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SUMMARY

The paper aims to assess the contribution of micro-credit program in raising health knowledge among the poor women in rural Bangladesh. Data were collected from the 1998 sample survey of 500 mothers aged 15-49 who had at least one <5 year-old child. Findings revealed that the socio-demographic factors such as age of woman, land ownership of the family and occupation of husband had no association with the prevalence of maternal knowledge. The knowledge was much higher among credit forum participants than non-participants although exposure to media and education of women had also played significant role in raising knowledge. Multivariate analysis suggested that the duration of credit program participation and exposure to media were significantly more likely to raise the health knowledge among women when the influence of demographic and socio-economic factors were controlled. The paper concludes that micro-credit program can be an effective tool in promoting health among the poor women in Bangladesh.

Key words: Health knowledge; credit program; Bangladesh

INTRODUCTION

The need of raising maternal health knowledge in reducing morbidity and mortality in childhood was widely reported (Aung *et al.*, 1994; WHO, 1984) although the level of awareness had remained very poor in the developing countries (Nichter and Nichter, 1994; Hussain *et al.*, 1997). Community-based intervention to promote health knowledge had been launched in many countries (Davis and Reis, 1988; Tembo, 1995; Huang *et al.*, 1994) but the assessment of such attempts indicated that the achievements were minimal (Laverack *et al.*, 1997; Huang *et al.*, 1994).

Although Crane and Carswell (1992) reported that the long-term behaviour change among the marginalised groups might be difficult by only education, health communication through mass media was effective in raising knowledge and facilitating behaviour change (Valente *et al.*, 1996). Various health communication strategies such as interpersonal meetings and the use of mass media were adopted in disseminating knowledge. Health education through drama and songs was also very popular mode of communication (Tembo, 1995). Several socio-economic and individual factors may influence health communication process. Among these, educational achievement in raising health knowledge has received attention in recent years (Hussain *et al.*, 1997; Huang *et al.*, 1994; Crane and Carswell, 1992; Power, 1996). Poor female education found to be an important impediment to health knowledge use in Bangladesh (Guldan *et al.*, 1993).

One major reason of high morbidity and mortality in Bangladesh is the lack of maternal knowledge about the need of prenatal care and preventive measures. For example, only 14.8% mothers were aware about the sources of treatment of ARIs (Hadi, 1999). Despite the significant expansion of health services in the last two decades in the countryside, the health status has remained poor in Bangladesh (BBS, 1995).

Several health promotion approaches ranging from individual contacts to the use of popular arts were attempted in Bangladesh. Studies reported that the interpersonal communication was more effective than entertainment approach when the messages were targeted to general public (Hussain *et al.*, 1997). Health promotion through raising the status of women was tried in many countries (Amin and Li, 1997; Manderson and Mark, 1997). The assumption was that women would become more interested in their own health and health care if their status and rights were improved. Reaching the poor and women was considered essential for any effective health system because, as found in many studies, the carefully designed program could significantly change health behaviour (Rogers, 1996). In this paper, the contribution of micro-credit programs in improving health knowledge among the poor women in rural Bangladesh is examined.

MATERIALS AND METHODS

Credit forum as a media

Both the government and NGOs have spent considerable amount of resources to promote health and health care services in Bangladesh. The dissemination of health messages through mass media, observance of health campaigns, use of community health educator and routine counselling services at the health care facilities were important components of health promotion. Many of such promotional components were inappropriately designed to reach the poor living in remote areas of the country. While the conventional approaches in reaching the poor were largely ineffective in producing desired outcome, micro-credit based development programs, introduced primarily by the non-government organisations (NGOs) in mid seventies, were regarded as successful because of their emphasis on the planned intervention at the grassroots level (Uphoff, 1993; BRAC, 1999). The program included not only the collateral-free credit for the rural poor women but a package of support services such as group meetings, skill training, basic literacy and primary health care services. The program had the ability to sensitise the poor women and initiate the process of change.

The major health promotional activities of credit programs were social awareness education course for the poor women each year, monthly meeting on an issue relevant to their life such as violence against meeting, human rights, etc., and essential health care including family planning, water and sanitation, immunisation, nutrition education, and basic curative services (BRAC, 1996). The dissemination sessions were conducted by BRAC officials with the help of community health volunteers. The community volunteers mobilised rural women to receive these services and played proactive roles in organising satellite clinics, EPI centres and other health services campaigns. The purpose was to raise awareness about various dimensions of health and health care among the participants of the credit programs.

The survey

Data for this study were collected from a demographic and health surveillance system covering 70 villages in 10 regions of Bangladesh where BRAC and a number of local NGOs had credit-based income generating activities. Only women from poor households were eligible to participate in such development forums where they were entitled to receive not only credit support and skill training but had the opportunity to discuss their problems and possible options to resolve those problems. In identifying the poor households in rural areas, NGOs generally consider landless households where adult members sell their manual labour to others for survival. In this study, 'the eligible to participate' was defined as women of those households where the breadwinners were labourers and each household owned less than 50 decimals of land. Not all women of the poor and eligible households participated in

NGO-led credit programs. The sample women were categorised into four groups: i) the poor women who participated in the credit program for <5 years, ii) the poor women who participated for 5 years or more, iii) poor and eligible to participate but never involved in any program, and iv) women of not eligible non-poor households. This 4-cell comparison allowed us to assess the effects of credit forum on the health knowledge of women in the study communities.

The surveillance system database provided the sampling frame of women who had at least one <5 year-old child. A systematic random sampling technique was followed to select 50 women from each of the 10 study regions. In total, 500 women were interviewed in January 1998 that provided basic socio-economic characteristics of women and their involvement with NGO-led credit forums in the community.

Model specification

The basic assumption to be examined in this study was that the participation of the women in credit forums significantly raised their knowledge about pre and postnatal health care. There were other variables in the analytical framework such as exposure of women to mass media, age and education of women, occupation of husband and amount of land owned by the household that assumed to modify the main hypothesis of credit forum – health knowledge linkage.

The contribution of credit forum on maternal health knowledge was assessed by logistic regression model. The main independent variables were women's participation in credit forum and the exposure to mass media. The confounding variables added to the multivariate analysis were age and education of women, occupation of husband and land ownership. *Age* was coded in single years. *Education of women* was coded as some or no education. *Occupation of husband* was dichotomised as farm and non-farm. *Land ownership* was a continuous variable in decimals.

This study has certain limitations. It should be noted that cross-sectional data without random assignment of sample women between non-participation and participation in credit forum might generate biased estimates because women who were relatively innovative might be more likely than others to join the credit forum activities (Pitt *et al.*, 1999). In the absence of longitudinal data, the influence of endogeneity or selection bias was adjusted by employing multivariate analyses (Aldrich and Nelson, 1984).

Analytical procedure

Only the relevant aspects of health care that the NGOs addressed in the credit forums were considered in selecting outcome variables. Two aspects such as pre and postnatal care were focussed in this study using three variables in each type. In measuring knowledge about prenatal care, each woman was

asked whether a) she was aware of the need of TT vaccine during pregnancy, b) she had knowledge about (iron or vitamin) supplementation, and c) whether she mentioned the need of routine prenatal health check-up. For the knowledge of postnatal care, each woman was asked whether she a) knew the correct number of the doses of EPI, b) could mention at least three names of EPI preventable diseases, and c) had knowledge of at least three preventive measures (such as breastfeeding, immunisation, nutrition intake, use of safe drinking water, antenatal care, etc.) of child mortality.

Table 1: Profile of sample women by their participation in micro-credit forum

Study variable	Poor		<i>P</i>	Non-poor	All women
	Non-participant	Active participant		Not eligible	
Age of women (year)			<i><0.01</i>		
< 30	61.0	30.2		38.7	39.6
30 - 39	31.4	41.1		32.3	36.6
40 +	7.6	28.7		29.0	23.8
Mean age	29.7	35.4		35.1	33.8
Education of women			<i><0.05</i>		
No education	89.8	81.0		46.0	74.4
Some education	10.2	19.0		54.0	25.6
Mean school year	0.40	0.70		3.17	1.24
Land ownership (decimal)			<i>ns</i>		
Landless	78.0	81.4		36.3	69.4
1 - 199	22.0	18.6		54.0	28.2
200 +	0	0		9.7	2.4
Mean amount of land	5.1	4.8		67.0	20.3
Occupation of husband			<i><0.01</i>		
Farm	66.9	38.0		29.8	42.8
Non-farm	33.1	62.0		70.2	57.2
Exposure to media*	14.4	29.1	<i><0.01</i>	37.1	27.6
N	118	258		124	500

ns=not significant.

*Exposure to media was measured by asking whether a woman frequently listened to radio or watch television programs.

RESULTS

Profile of the sample women

The differences in socio-demographic characteristics of sample women by their participation in credit forum were very wide (Table 1). Women who participated in micro-credit forum activities were generally older than non-participants as reflected in the mean and proportion of age groups ($p<0.01$).

Illiteracy among women was widespread in the study villages as only 25.6% women went to school. The poor and non-participants were the most deprived of education as only 10.2% of them had some schooling while 19% participants went to school ($p<0.05$). After joining the credit program, women were expected to participate in adult literacy sessions, which might have raised the literacy among the forum participants. Nearly 69% of the households were landless. While the landlessness was less prevalent among the non-poor, it appeared that the forum participants and non-participants were equally poor in terms of owning land holdings. Non-farm activities dominated occupational distribution (57.2%) of adult men in the study villages. The distribution of spousal occupation indicated significant ($p<0.01$) difference among the poor as nearly two-third husbands of the non-participants compared to only 38% husbands of participants were engaged in farm activities. Exposure to media in rural settings in Bangladesh was very poor as only 27.6% women had access to electronic media. When compared among poor women, the non-participants appeared to be least exposed ($p<0.01$) than forum participants.

The results do not clearly suggest whether NGOs failed to reach most of the poor women or whether the socio-demographic differences between the participants and non-participants were the outcome of participation in micro-credit forums. The existence of selection bias to become the participant of credit forum activities cannot be ignored. This finding supports the assumption that only a small proportion of the very poor had access to micro-credit programs (Pitt *et al.*, 1999).

Table 2: Proportion of women having knowledge of prenatal care by communication and socio-economic factors

Study variable	Prenatal care		
	Tetanus vaccines ^a	Vitamin supplement ^b	Medical check-up ^c
All	60.2	13.6	6.0
Socio-demographic factors			
Age of women			
< 30	67.2	15.2	4.0
30 - 39	56.8	13.1	6.6
40 +	53.9	11.8	8.4
<i>P-value</i>	<i><0.05</i>	<i>ns</i>	<i>ns</i>
Land ownership (decimal)			
Landless	61.7	12.7	6.3
1 - 199	56.7	14.2	4.3
200 +	58.3	33.3	16.7
<i>P-value</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
Occupation of husband			
Farm	58.9	13.6	4.2
Non-farm	61.2	13.6	7.3
<i>P-value</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
Communication factors			
Credit forum			
Not participated	48.3	7.6	1.7
Participated (<5 y)	64.9	13.2	5.3
Participated (5+ y)	62.6	15.9	11.2
Not eligible	63.7	17.7	6.5
<i>P-value</i>	<i><0.05</i>	<i>ns</i>	<i><0.05</i>
Exposure to media			
Not exposed	58.0	10.8	4.1
Exposed	65.9	21.0	10.9
<i>P-value</i>	<i>ns</i>	<i><0.01</i>	<i><0.01</i>
Education of women			
No education	56.2	13.4	5.4
Some education	71.9	14.1	7.8
<i>P-value</i>	<i><0.01</i>	<i>ns</i>	<i>ns</i>

ns=not significant.

^aAwareness about the need of TT vaccines during pregnancy.

^bKnowledge about iron or vitamin supplementation.

^cAbility to mention the need of routine prenatal health check-up.

Prenatal care

Among the three types of prenatal care examined, tetanus vaccines during pregnancy was widely known (60.2%) compared to the need of vitamin and iron supplementation (13.6%) and routine medical check-up (6%) by qualified health care providers (Table 2). All three types of knowledge about prenatal care differed by socio-economic characteristics of women but the differences were statistically insignificant in most cases. For example, age of women had no significant relationship with health knowledge during pregnancy except tetanus vaccines. Similarly, neither the land ownership of the household nor the occupation of husband had any significant relationship with any types of knowledge of prenatal care. Among the three communication factors, the participation in micro credit forum appeared to have positive association with the maternal knowledge of prenatal care. Media exposure had a strong correlation with prenatal care except the tetanus vaccines. Unlike our assumption, the role of education among women in raising knowledge was not prominent except tetanus vaccines.

Table 3: Odds ratios for selected indicators of the knowledge of prenatal care

Predictor variable	Prenatal care		
	Tetanus vaccines	Vitamin supplement	Medical check-up
Credit forum			
Not participated	1.00	1.00	1.00
Participated (<5 y)	2.15***	2.19*	2.59
Participated for (5+ y)	2.39***	3.79***	4.88*
Not eligible	1.86**	2.69**	2.28
Exposure to media			
Not exposed	1.00	1.00	1.00
Exposed	1.25	1.99**	2.32**
Education of women			
No education	1.00	1.00	1.00
Some education	1.85**	0.67	1.28
Age of women	0.97***	0.95***	1.01
Land ownership	1.00	1.01**	1.00
Occupation of husband			
Farm	1.00	1.00	1.00
Non-farm	0.95	0.82	1.11
--2 Log likelihood	642.4	370.8	211.1
Pseudo R squared	0.08	0.09	0.09

* p<0.10

** p<0.05

***p<0.01

The net effects of the credit forum participation on the three types of prenatal care were examined by using logit regression analysis (Table 3). The regression equations were controlled for age and education of women, exposure to mass media, husband's occupation and amount of land owned. The participation in micro-credit based development forums had significant positive effect on knowledge of prenatal care. Data show that the duration of participation tended to raise the odds ratios for all three indicators of prenatal care. The findings demonstrate that longer a woman participated in credit forum, the greater the likelihood that her knowledge about prenatal care would increase. As found in other studies exposure to media also played a significant role in raising prenatal health knowledge (Valente, 1996) except tetanus vaccines. Maternal education was also positively associated with tetanus vaccines ($p < 0.05$).

Table 4: Proportion of women having knowledge of post-natal care by communication and socio-economic factors

Study variable	Post-natal care		
	EPI doses ^a	Diseases prevented ^b	Child survival ^c
All	52.4	75.0	36.4
Socio-demographic factors			
Age of women			
< 30	52.5	76.8	32.3
30 - 39	56.8	76.5	38.3
40 +	45.4	69.7	40.3
<i>P-value</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
Land ownership (decimal)			
Landless	50.4	74.6	34.6
1 - 199 d	55.3	75.9	39.0
200 + d	75.0	75.0	58.3
<i>P-value</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
Occupation of husband			
Farm	49.1	71.0	34.1
Non-farm	54.9	78.0	38.1
<i>P-value</i>	<i>ns</i>	<i><0.10</i>	<i>ns</i>
Communication factors			
Credit forum			
Not participated	38.9	60.2	11.9
Participated (<5 y)	55.6	78.8	43.0
Participated (5+ y)	56.1	80.4	45.8
Not eligible	57.3	79.8	43.5
<i>P-value</i>	<i><0.05</i>	<i><0.01</i>	<i><0.01</i>
Exposure to media			
Not exposed	47.8	71.3	30.1
Exposed	64.5	84.8	52.9
<i>P-value</i>	<i><0.01</i>	<i><0.01</i>	<i><0.01</i>
Education of women			
No education	50.0	70.4	32.8
Some education	59.4	88.3	46.9
<i>P-value</i>	<i><0.05</i>	<i><0.01</i>	<i><0.01</i>

^a Correct knowledge about the doses of EPI.

^b Whether correctly mentioned at least three names of EPI preventable diseases.

^c Knowledge of at least three measures (breastfeeding, immunisation, nutrition intake, use of safe drinking water, antenatal care, etc.) that prevent child death.

Postnatal care

Maternal knowledge about postnatal care was better than prenatal care as more than 52% women knew the correct number of doses of EPI, about three-fourth could mention at least three names of EPI preventable diseases and more than a third had knowledge of at least three measures that prevent child death (Table 4). The socio-demographic factors such as age of woman, land ownership of the households and occupation of husband had no significant association with any type of postnatal care. Among the communication variables, the participation of women in micro-credit forum raised three types of postnatal care. Data also supports that mass media were effective in raising knowledge and facilitating behaviour change (Valente *et al.*, 1996). The education of women significantly modified maternal knowledge of postnatal care in Bangladesh as reported by others (Guldan *et al.*, 1993).

Table 5: Odds ratios for selected indicators of the knowledge of post-natal care

Predictor variable	Post-natal care		
	EPI doses	Diseases prevented	Child survival
Credit forum			
Not participated	1.00	1.00	1.00
Participated (<5 y)	1.92**	2.58***	5.65***
Participated for (5+ y)	2.21**	3.37***	6.61***
Not eligible	1.60	2.02*	4.23***
Exposure to media			
Not exposed	1.00	1.00	1.00
Exposed	1.77***	1.84**	2.26***
Education of women	1.17	2.63***	1.43
Age of women	0.97**	0.96***	0.99
Land ownership	1.00	1.00	1.01
Occupation of husband			
Farm	1.00	1.00	1.00
Non-farm	1.08	1.14	0.73
--2 Log likelihood	665.3	514.4	588.9
Pseudo R squared	0.07	0.13	0.17

* p<0.10

** p<0.05

***p<0.01

The net effects of micro-credit forum on three indicators of prenatal care were estimated in Table 5 where it appeared that credit forum participation had some positive effects (p<0.05) in gaining knowledge about correct doses of EPI probably because they had better opportunities to learn about

health care than non-participants. The knowledge about EPI preventable diseases was significantly higher among forum participants than non-participants that increased further with the duration of participation. Similarly, knowledge of the role of EPI in reducing child morbidity and mortality was significantly higher among participants than others. The findings demonstrate that the health messages received by women from various credit program sources can contribute in raising the post natal health knowledge among women.

DISCUSSION

This study demonstrates that the credit-based development forums can be effectively used in raising health knowledge among poor rural women. Although the knowledge level has remained very low among the poor, significant improvement is possible if appropriate health promotion measures are taken. Several media were used to promote health knowledge in rural Bangladesh such as discussion meetings, newspaper articles, posters and billboards displayed at public places, films and songs in radio and television. These efforts were able to reach only a segment of the target audience. It has remained unclear why such media were not able to effectively improve the health knowledge. One explanation has been that the poor and women, being the most disadvantaged group in the society, were not able to clearly understand most of the health messages. They could not relate the contents of the health information with their experience, thinking processes and reference points of their life. The conventional health information were not targeted to any specific groups but designed to cover *all* population. As a result, the receptivity of knowledge contents varied widely by education, occupation and socio-economic status of the listeners. Most often, the audience plays a passive role and pays little attention to what they hear or see. The factors that create interest such as relevance and social appropriateness were not adequately considered in designing the health promotion system (Lewis, 1994).

The credit-based communication approach, on the other hand, pays more attention to the need of the listeners and their ability to understand rather than the significance of information. As most of the target women were illiterate, the print media were not considered appropriate for them. On the other hand, the electronic media such as television were not affordable to most households. Thus, focus group discussion was considered the most suitable media to disseminate health knowledge among the poor women. One major feature of this approach has been the integration of health promotion with other development programs. Eligibility to receive credit from BRAC requires that the woman should know basic health practices. Compared to the other women, the credit recipients pay more attention to health

promotion activities in order to keep their eligibility to receive credit, free education for their children and subsidised health care for their family members. In the group meetings, they were largely homogeneous in terms of age and socio-economic status where they freely interact with a woman health promoter in community settings. The discussion and diffusion created an enable environment to modify health behaviour of the participants through their interactions among themselves and with the credit program staff. The process of change, however, would depend on the social and cultural context where the women live and interact.

The strength of this approach was its flexibility in conducting the health promotion sessions. The participants had to select the venue, date and the topic of the meeting. As a result, the discussion was more relevant and appropriate to their needs. The system of accommodating their concerns provided them a sense of closeness with the discussion sessions. The mode of conducting meeting was also flexible that can be changed or modified if necessary during the session.

One feature of the micro-credit program was mandatory health check-up for each credit recipient at the time of receiving services. In a way, the participants were given additional opportunities to discuss their health problems with a paramedic and recollect what they learned earlier. Such re-enforcement had significant positive effects in understanding the messages. This has been reflected earlier where women involved in credit program for longer years knew more than others.

Health promotion at the grassroots level was costly when it was one-dimensional program. The credit-based health promotion was cost-effective since other components such as income generating activities, adult literacy and basic curative services were added to the package. The study concludes that carefully designed integrated development program can significantly increase health knowledge among the poor women in developing countries (Rogers, 1996; Davis and Reis, 1988).

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