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Interactions between microfinance programs and non-economic empowerment of women associated with intimate partner violence in Bangladesh

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Running title: Microfinance and violence against women (2807 words)

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Abstract

Objective: This study aims to examine the associations between microfinance program membership and intimate partner violence (IPV) in different socioeconomic strata of a nationally representative sample of women in Bangladesh.

Methods: The cross-sectional study was based on a nationally representative interview survey of 11,178 ever-married women of reproductive age (15–49 years). 4465 women answered the IPV-related questions were analyzed separately using chi-square tests and Cramer's *V* as a measure of effect size to identify differences in proportions of exposure to IPV with regard to microfinance program membership and demographic variables and interactions between microfinance program membership and factors related to non-economic empowerment were considered.

Results: Only 39% of women were members of microfinance programs. The prevalence of a history of IPV was 48% for moderate and 16% for severe physical violence, 16% for sexual violence. For women with secondary or higher education, and women at the two wealthiest levels of the wealth index, microfinance program membership increased the exposure to IPV two three and two times respectively. The least educated and poorest groups showed no change in exposure to IPV associated with microfinance programs. The educated women who were more equal with their spouses in their family relationships by participating in decision-making increased their exposure to IPV by membership in microfinance programs.

Conclusion: Microfinance plans are associated with increased exposure to IPV among educated and empowered women in Bangladesh. Microfinance firms should consider providing information about associations between microfinance and IPV to the women belonging to risk groups.

Key words: Microfinance, Violence against women, Bangladesh, Cross-sectional, DHS.

Article focus:

- Associations between membership in microfinance programs and exposure to intimate partner violence against woman.
- Interactions between empowerment of women through microfinance and non-economic empowerment through spousal equity and formal education.

Key messages:

- 51% of the women respondents are victims of any form of intimate partner violence
- For different socioeconomic backgrounds, micro finance association of the women enhances their exposure to intimate partner violence.
- Equity in family decision making for the educated women increased the exposure to IPV by membership in microfinance programs.

Strengths and limitations of this study:

- National representative sample from entire Bangladesh
- Cross-sectional study design implies that the results only can be used to hypothesize about IPV causes.

Introduction

A growing body of research has recognized that intimate partner violence (IPV) has far-reaching health and economic impacts for women and societies worldwide [1]. IPV, in all forms, occurs every day in all parts of the world, cutting across age, religion, societal, ethnic and geographic borders. However, women who live in poverty have been reported to be particularly exposed to IPV [2–5]. The association between domestic violence and gender imbalance is also a known consequence of the subordinate status of women [6, 7]. In this context, economic empowerment has been highlighted in policy making to reduce the gender imbalance and to improve the social status of women [8]. Microfinance programs were introduced in the 1990s throughout the developing world as income-generating projects to provide credit and savings services, particularly to poor women lacking a formal education. Relationships between microfinance programs and improved status of child mortality, nutrition, immunization coverage, and contraceptive use have been documented [9–12]. In addition, descriptive epidemiological studies of associations between microfinance programs and IPV have reported promising findings of reduced IPV [13–15], and a recent cluster randomized trial from southern Africa concluded that a combined microfinance and training program reduced IPV among participants [16]. However, studies using qualitative methods [17] have identified microfinance as an exacerbating factor for IPV in Bangladesh. The interactions between microfinance programs, gender issues, education, and IPV thus warrant further epidemiological investigations in low-income countries.

Bangladesh is known globally for its microfinance programs, especially after the acknowledgment from the Nobel Committee [18]. This study set out to examine the associations

between membership in microfinance programs and exposure to IPV in different strata of a nationally representative sample of women in Bangladesh. In previous research, microfinance programs have been regarded as a general vehicle for the empowerment and emancipation of women [4]. Simultaneously, IPV in Bangladesh has been reported as a socio-medical problem closely related to gender inequality and the position of women in society [5, 19]. Therefore, we also wanted to study the interactions between empowerment of women through microfinance and non-economic empowerment through spousal equity and formal education.

Methods

The study was based on a cross-sectional design, implemented in Bangladesh through a nationally representative household survey. Reporting of the study was organized according to the *Strengthening the Reporting of Observational Studies in Epidemiology (*STROBE) statement [20].

Insert figure 1

Data collection

Data collection was conducted by an interview survey in all six administrative divisions of Bangladesh: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, and Sylhet. Details of the survey are available at http://www.measuredhs.com/pubs/pdf/FR207/FR207[April-10-2009].pdf. The survey was designed to be representative for most of the demographic indicators for the country as a whole, for each of the six divisions, and for the urban and the rural areas separately. Initially, multistage cluster sampling was used, based on the 2001 population census. In total, 361 representative sample clusters were identified, 227 in rural areas and 134 in urban areas. From

the sample clusters, 10,819 households were identified for the survey initially. Of these households, 10,416 were found to be occupied, and 10,400 were available for the survey. All ever-married women of reproductive age (15–49 years) who slept in the selected households the night before the survey were defined as being eligible for the present study. From the survey households, 11,178 eligible women were identified for interview.

A total of 128 experienced field staff, trained for the task, in 12 interview teams conducted the interviews. Each team consisted of one male supervisor, one female field editor, five female interviewers, two male interviewers, and one logistics staff member. Four quality control teams ensured data quality; each team included one male and one female data quality control worker. In the presence of the perpetrator, interviewing the victim carries the risk of further violence. Therefore, interviewers received special training on conducting an interview on spousal violence based on a training manual focusing on collecting date on violence in a secure, confidential, and ethical manner. Moreover, the IPV questionnaires were administered at the end of the interview, enabling both the interviewer and the respondent to become well acquainted with each other by the time they were discussing IPV issues [21]. The interview teams were also prepared to help the women (respondents) if they asked for assistance, such as helping them to go to the women's shelter, an organization assisting distressed women. The face-to-face interview took place in a safe and secure place. If privacy could not be secured for the woman, the interviewers did not ask IPV-related questions.

The survey obtained detailed information on demographics, salient health issues, and issues related to domestic violence. The current study utilized variables covering IPV and membership of a microfinance program. The following variables were used.

Intimate partner violence

The survey data collected on IPV within the most recent 12 months (with the latest/current husband) were transformed into the following variables:

- Moderate physical violence: had the husband ever pushed, shaken, or thrown something; ever slapped; ever punched with a fist or something harmful; ever kicked or dragged.
- Severe physical violence: had the husband ever tried to choke or burn; ever threatened with a knife/gun or other weapon; ever attacked with a knife/gun or other weapon.
- Sexual violence: had the husband ever physically forced sex when not wanted.
- Any violence: having been exposed to at least one of the types of IPV defined above.

All IPV variables measured spousal violence with a shortened and modified Conflict Tactics Scale (CTS) [22].

Microfinance programs

Microfinance program membership was coded for respondents who belonged to any of the following organizations: Grameen Bank, BRDB, BRAC, ASHA, PROSHIKA, or any microcredit organization. These are the best-known and popular government-approved organizations providing microfinance credit.

Spousal equity

Household decision making was used as a proxy measure for gender equity in family relations. Specifically, spousal equity was measured through two variables:

Household decision making on own health issues: respondent alone; jointly by respondent and her husband; respondent and other family members; respondent's husband; someone else in the family.

Household decision making in household purchase issues: respondent alone; jointly by respondent and her husband; respondent and other family members; respondent's husband; someone else in the family.

The sociodemographic variables used in the present study were respondent age (15–19, 20–24, 25–29, 30–34, 35–39, 40–44, and 45–49 years), rural–urban residency, education (no education, primary school, secondary school, and higher education), religion (Muslim and non-Muslim), and whether household head was male or female. Economic status was estimated using the wealth index. This index, which divides populations into five economic quartiles (poorest, poorer, middle, richer, and richest), is widely used for measuring economic status in developing countries [23].

Statistical analysis

Chi-square tests were used to examine differences in proportions of exposure to IPV (moderate physical, severe physical, sexual, and any violence) and association between microfinance and demographic variables (age, residence, education, religion, and wealth index) with Cramer's *V* as a measure of effect size. Odds ratios (OR) were calculated to indicate the increase in exposure to IPV associated with membership in microfinance programs compared with non-membership. For analysis of interaction effects between spousal equity and microfinance programs in relation to the sociodemographic variables found associated with IPV, the categories used for the household decision-making variables were re-coded to woman deciding (decision was made by respondent

alone, jointly by respondent and her husband, or by respondent and other family members) and others deciding (decision was made by respondent's husband or by someone else in the family). IBM SPSS Statistics Version 20 was used for all statistical analyses.

Ethical considerations

Ethical approval for the survey was obtained from the Institutional Review Board of Opinion Research Corporation (ORC), Macro International Incorporated. Informed consent was obtained from the participants before the start of the survey; the right to withdraw and guarantee of privacy was emphasized to the respondents throughout the survey. The field workers received specific training and support to deal with issues such as domestic violence. The standards on ethical and safety recommendations for research on domestic violence, which are set by the World Health Organization (WHO), were strictly adhered to. The WHO recommendations aim toward ensuring women's safety while maximizing disclosure of actual violence [24].

Results

Among 11,178 eligible women, 10,996 (98.4%) were interviewed; 4465 (41%) of the primary survey participants responded to the IPV-related questions (Fig. 1). Respondents to these questions were more frequently members of microfinance programmes (39%), compared with non-respondents (35%) (Table 1). It was also found that, among those who responded to the IPV questions, microfinance program membership was slightly more common among rural women and women from households with a male head compared with non-responders.

Insert Table 1 about here

Fifty-one percent (*n*=2275 of 4465) of the women who responded to the IPV questions had been victims of some form of domestic violence (Table 2). The specific exposures reported were 48% for moderate physical violence, 16% for severe physical violence, and 11% for sexual violence. Forty-nine percent of the women had not been exposed to any IPV. Having no formal education and belonging to the poorest group, according to the wealth index, were the sociodemographic risk factors most strongly associated with exposure to IPV. Rural residents had a slightly increased proportional rate of exposure to physical and sexual violence, and Muslim women were more exposed to IPV than their non-Muslim peers.

Insert Table 2 about here

For women with secondary school or higher education, microfinance program membership was associated with a two- or three fold increase in exposure to IPV, respectively (Table 3). Similarly, women at the two wealthiest levels of the wealth index showed a twofold increase in exposure to IPV associated with program membership. The least educated and poorest groups showed no change in IPV exposure associated with microfinance programs. Sexual violence did not show any statistically significant increase with microfinance activities.

Insert Table 3 about here

The detailed analyses of interaction effects showed that only formally educated women, who were more equal with their spouses in their family relationships, experienced more IPV by

membership in microfinance programs (Table 4). Women participating in decision making about management of their own health issues and who had a higher formal education than primary school were between two to three times more exposed to spousal violence when they were members of microfinance programs. Among these women, those with the highest formal education were at more than four times higher risk of sexual violence when associated with microfinance than when not. No increase in IPV risk was observed for women who were not involved in decision making about management of their own health issues. In addition, using decision making on household purchases as a proxy for spousal equity, the women with formal education experienced increased spousal violence when they were also members of microfinance programs. No such increase in IPV risk associated with microfinance was observed for women who were not involved in decision making on household purchases.

Insert Table 4 about here

Discussion

Several previous epidemiological studies of IPV [13–15], including an early study from rural Bangladesh [9], have reported a protective effect of microfinance programs. Our results do not support the assertion that microfinance generally reduces IPV. The results from our study showed a pattern where microfinance was associated with increased exposure to IPV among women with a formal education. However, educated program members were less exposed to IPV if they were not involved in the family affairs, i.e. no increase in IPV was observed in households where the wife was associated with microfinance but excluded from the day-to-day

decision making. Sexual violence was less clearly associated with different risk of IPV when being part of a microfinance program. This finding of different patterns between sexual and physical violence hypothesize existing differences in the causes of sexual and physical IPV, which is in accordance with several previous studies from Bangladesh [5, 25–30].

There are several limitations that have to be taken into account when interpreting the current results. The study used a cross-sectional design, implying that the results only can be used to hypothesize about IPV causes. However, the observation that formally educated microfinance program members who participated in household decision making were more exposed to IPV suggests that either disagreements between spouses related to the management of household resources were linked to IPV, or that formally educated women who participate in household decision making are more able to free themselves from an established IPV pattern by participating in microfinance programs. The current study does not include dowry demands. Therefore, possible effects of dowry demands and/or microfinance plans on IPV are not explored here. Nonetheless, a recent study reports that dowry is uncommon among educated women in Bangladesh [31]. Other mechanisms linking microfinance with IPV are more likely to explain these association patterns. Even though the formally educated women were generally less exposed to IPV, microfinanced loans may have caused more economic stress in this group due to larger business projects and multiple loans. It is possible that solidarity circles, which extend informal economic reciprocity beyond the family to the local community, were accepted as security for the microfinance loans among the poor. In contrast, formal security limited to the family may have been more common among the more wealthy and educated women. Such circumstances could explain why microfinance in the educated group reported more IPV

exposure in interaction with non-financial empowerment, i.e. by shared household decision making [9]. Hence, there may have been fewer conflicts in households where the wife was not empowered mainly because husbands managed the loans in these households single-handedly. In addition, data on when the women joined the microfinance programs were not collected in the study. Thus, associations between the microfinance program membership phase and occurrence of IPV could not be examined. Thus, further research is needed on the mechanisms by which repayment of microfinance loans is associated with IPV among empowered women in developing countries [23].

Even though the initial survey response rate was 98%, the rate of response to the IPV-related questions was only 39%. However, we found only minor differences in relation to sociodemographic variables between responders and non-responders. Moreover, response bias may have resulted from recall bias or deliberate unwillingness to disclose a history of domestic violence. Participants may have been reluctant to disclose their own victimization of IPV, given the sensitive nature of the questions and the strong social stigma. Under-reporting of events in association with the IPV-related questions may therefore have reduced the primary rates. Nonetheless, we do not expect that such under-reporting influenced the analyses of associations between IPV, microfinance program membership, spousal equity, and the woman's educational level. The analysis included numerous statistical tests but, with corrections for multiple comparisons, the family-wise error rate was maintained at a reasonable level. The effect sizes were low to moderate. The results are relevant at a group level, but another research design is needed to examine the factors that identify individual women at different risks for IPV.

In accordance with previous research [3, 5, 9], about every second woman in our study reported having been a victim of IPV. There is thus ample evidence that women in Bangladesh and other countries in the Indian subcontinent suffer from a heavy burden of IPV, and the identification of predisposing factors as well as countermeasures has recently been called for in this region [25]. We found that microfinance program membership was not associated with a decreased level of IPV in any population strata. Membership was associated with higher IPV exposure among women with a formal education. However, our findings should be interpreted in light of the limitations of the study (i.e. a cross-sectional design was used and there was a considerable non-response to the IPV-related survey questions). Other studies in different countries have indicated that association with microfinance reduces IPV exposure [13–15]. The findings in this study raise the question that association with microfinance are not always associated with reduced levels of IPV. Therefore additional prospective studies in different settings are warranted to study mechanisms by which economic stress might be a a contributing factor for IPV associated with microfinance, as well as on the effects resulting from interactions between economic and non-economic empowerment.

The results of this study still have policy implications. Microfinance programs in Bangladesh make claims in their marketing campaigns about social responsibility. These organizations can therefore be expected to act with particular social conscientiousness. According to the results of this study, microfinance firms should be aware that program membership may increase IPV exposure among women belonging to risk groups. Alternatively, microfinance firms should be aware that microfinance program membership among formally educated women might reflect an increased exposure of IPV. However, before demands to provide information about risk for IPV

can be put on microfinance firms, the identification of risk groups should be confirmed in prospective studies.

Conflict of interest: None declared.

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Figure 1. Study participation displayed according to the STROBE statement.

Table 1. Prevalence of membership in microfinance programs among the survey participants divided by response and non-response to the intimate partner violence (IPV) question and displayed by age, residence, education, religion, sex of household head, and household wealth index. Chi-2 tests test for differences in distribution of microfinance program membership between the respondents and the non-respondents to IPV questions.

	Respondents to IPV questions		**Non-respondents to IPV questions**		**Total**	
	N	%	n	%	n	%
Age						
15-19	462	29	886	23	1348	26
20-24	850	36	1323	31	2174	33
25-29	866	43	1068	37	1935	40
30-34	742	40	918	39	1661	39
35-39	701	41	895	41	1596	41
40-44	462	42	756	38	1218	40
45-49	380	36	684	35	1064	35
Residence						
Urban	1688	36	2482	33	4151	34
Rural	2795	40*	4048	36	6845	37
Education						
No education	1494	45	2030	40	3525	41
Primary	1348	44	1920	40	3268	42
Secondary	1292	31	2051	29	3345	30
Higher	327	19	528	19	855	19
Religion						
Muslim	4033	38	5889	34	9924	36
Non-Muslim	430	48	641	41	1072	44
Household head						
Female	505	25	802	26	1308	25
Male	3958	40*	5728	36	9688	37
Wealth index						
Poorest	804	47	971	41	1175	43
Poorer	856	45	1138	42	1995	43
Middle	849	42	1246	40	2095	41
Richer	855	41	1345	37	2201	38
Richest	1099	23	1830	22	2930	22
Total	4465	39*	6531	35	10993	36

Significance for chi-square test is denoted by * ($p < .05$, Bonferroni corrected for 22 comparisons in each column).

Table 2. Prevalence of intimate partner violence (IPV) in the final study population (n = 4467) displayed by age, residence, education, religion, sex of household head, and household wealth index. Chi-2 tests are presented for differences in distributions related to each of the variables age, residence, education, religion, household head and wealth index

	N	Moderate physical violence %	Severe physical violence %	Sexual violence %	Any violence %
Age					
15-19	462	42	14	14+	46
20-24	851	47	14	15+	50
25-29	867	49	17	12	52
30-34	743	51	18	11	55
35-39	701	48	17	9	50
40-44	462	49	19	7-	50
45-49	381	50	17	5-	51
Residence				$p < .05$, $V = .04$	$p < .01$, $V = .05$
Urban	1669	46	16	9-	47-
Rural	2798	49	17	12	53
Education		$p < .001$, $V = .22$	$p < .001$, $V = .17$		$p < .001$, $V = .21$
No education	1496	58+	23+	12	60+
Primary	1349	52+	18	12	56+
Secondary	1293	39-	10-	9	42-
Higher	327	20-	1-	8	25-
Religion		$p < .001$, $V = .06$	$p < .01$, $V = .05$		$p < .001$, $V = .07$
Muslim	4036	49	17	11	52
Non-Muslim	430	38-	10-	6-	40-
Household head					
Female	506	44	16	11	47
Male	3961	48	16	11	52
Wealth Index		$p < .001$, $V = .18$	$p < .001$, $V = .14$	$p < .001$, $V = .11$	$p < 0.001$, $V = .19$
Poorest	804	58+	22+	16+	62+
Poorer	857	53+	19	13	57+
Middle	850	53+	18	11	56+
Richer	856	46	17	10	49
Richest	1099	34-	8-	6-	36-
Total	4467	48	16	11	51

Significant Chi-2 tests ($p < .05$, Bonferroni corrected for 6 tests per column yielding $p < .0083$) including at least one standardized residual >2 (indicated by +) or <-2 (indicated by -) are reported by p values and effect size V (Cramer's V).

Table. 3 Associations between intimate partner violence (IPV) and membership in microfinance (MF) programs in different sociodemographic strata. Significant Chi2-tests for exposure to IPV and belonging to MF programs are reported by their effect sizes Cramer's *V* . Odds ratios (OR) indicate increased risk IPV for women than belonging to MF programs compared with women that did not belong to such programs. Only significant tests ($p < .05$, Bonferroni corrected for 80 tests yielding $p < .000625$) including at least one standardized residual >2 (indicated by +) or <-2 (indicated by -) are reported as significant

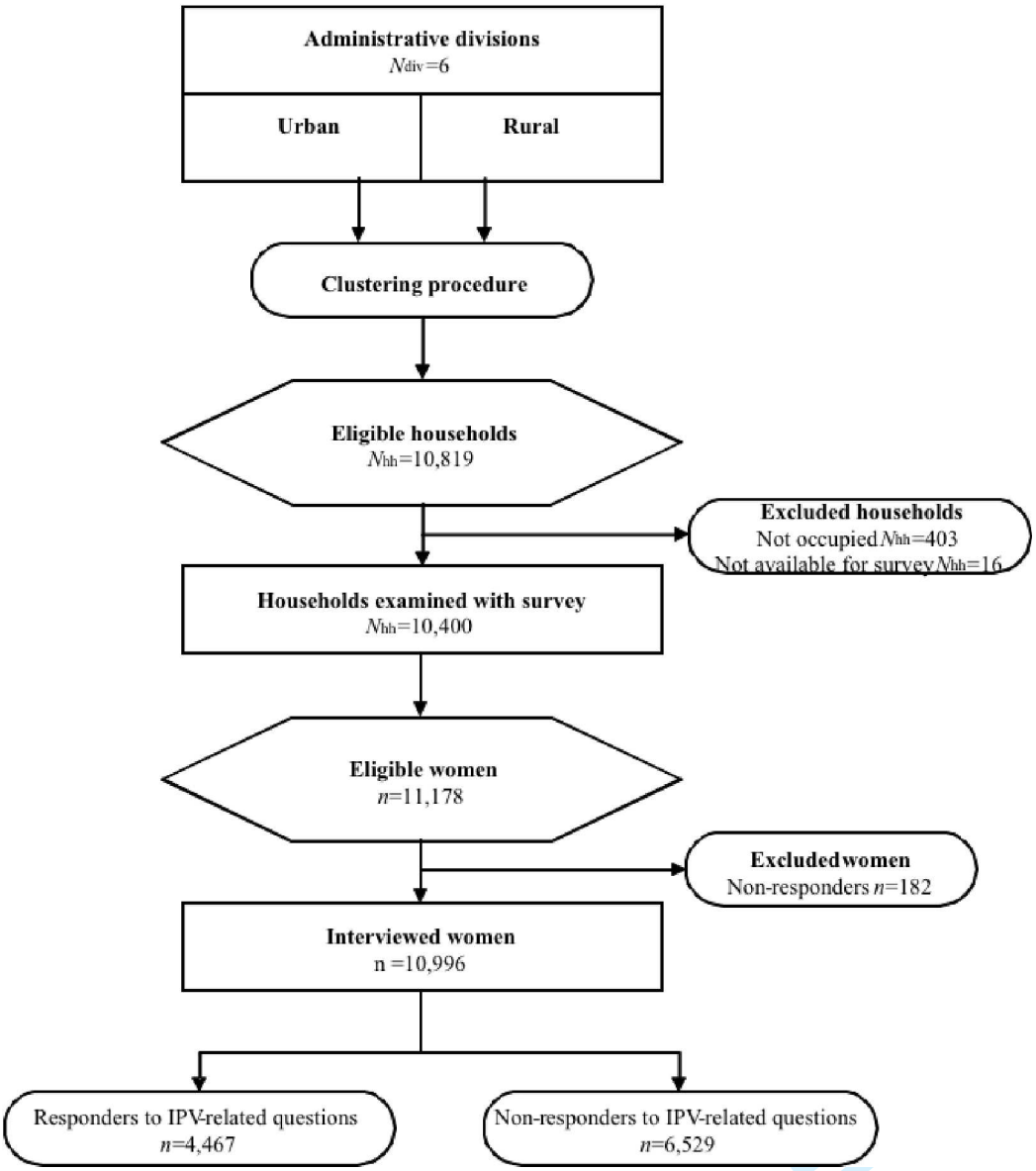
		Moderate Physical Violence					Severe Physical Violence				
		No Microfinance		Microfinance		*V* (OR)	No Microfinance		Microfinance		*V* (OR)
	N	IPV	No IPV	IPV	No IPV		IPV	No IPV	IPV	No IPV	
Age											
15-19	462	123	204	72	63		47	280	17	118	
20-24	*850*	*218-*	*327+*	*179+*	*126-*	*.18 (2.1)*	*58-*	*487*	*62+*	*243*	*.13 (2.1)*
25-29	866	216	279	205	166		73	422	75	296	
30-34	742	207	238	174	123		68	377	63	234	
35-39	*701*	*173*	*243*	*160+*	*125-*	*.14 (1.8)*	55	361	62	223	
40-44	*462*	*114*	*156*	*114+*	*78-*	*.17 (2.0)*	39	231	47	145	
45-49	380	114	129	74	63		37	206	27	110	
Residence											
Urban	*1668*	*418-*	*645+*	*344+*	*261-*	*.17 (2.0)*	*138-*	*925*	*120+*	*485*	*.09 (1.7)*
Rural	*2795*	*747-*	*931+*	*634+*	*483-*	*.12 (1.6)*	*239-*	*1439*	*233+*	*884*	*.09 (1.6)*
Education											
No education	1494	463	363	402	266		181	645	166	502	
Primary	*1348*	*356*	*400+*	*348+*	*244-*	*.12 (1.6)*	115	641	126	466	
Secondary	*1292*	*302-*	*591+*	*206+*	*193-*	*.17 (2.1)*	70	823	54	345	
Higher	327	44	220	22	41		11	253	7	56	
Religion											
Muslim	*4033*	*1093-*	*1425+*	*885+*	*630-*	*.15 (1.8)*	*357-*	*2161*	*329+*	*1186-*	*.10 (1.7)*
Non-Muslim	430	72	151	93	114		20	203	24	183	
Wealth Index											
Poorest	804	249	177	219	159		96	330	84	294	
Poorer	856	234	240	221	161		84	390	77	305	
Middle	849	237	251	217	144		77	411	76	285	
Richer	*855*	*191-*	*311+*	*206+*	*147-*	*.20 (2.3)*	*60-*	*442*	*89+*	*264*	*.17 (2.5)*
Richest	*1099*	*254*	*597*	*115+*	*133-*	*.15 (2.0)*	60	791	27	221	

		Sexual Violence					Any Violence				
		No Microfinance		Microfinance		*V* (OR)	No Microfinance		Microfinance		*V* (OR)
	N	IPV	No IPV	IPV	No IPV		IPV	No IPV	IPV	No IPV	
Age											
15-19	462	52	275	15	120		139	188	75	60	
20-24	*850*	83	462	42	263		*245*	*300*	*184+*	*121-*	*.15 (1.9)*
25-29	*866*	47	448	54	317		*231*	*264*	*221+*	*150-*	*.13 (1.7)*
30-34	742	42	403	34	263		223	222	181	116	
35-39	701	29	387	35	250		183	233	164	121	
40-44	*462*	19	251	12	180		117	153	116	*76-*	*.17 (2.0)*
45-49	380	14	229	5	132		120	123	75	62	
Residence											
Urban	*1668*	90	973	64	541		*436-*	*627+*	*354+*	*251-*	*.17 (2.0)*
Rural	*2795*	196	1482	133	984		*822-*	*856+*	*662+*	*455-*	*.10 (1.5)*
Education											
No education	1494	101	725	76	592		486	340	415	253	
Primary	1348	96	660	67	525		389	367	359	233	
Secondary	*1292*	74	819	43	356		*330-*	*563+*	*215+*	*184-*	*.16 (2.0)*
Higher	*327*	15	249	11	52		*53*	*211*	*27+*	*36*	*.21 (3.0)*
Religion											
Muslim	*4033*	276	2242	183	1332		*1183-*	*1335+*	*919+*	*596-*	*.13 (1.7)*
Non-Muslim	430	10	213	14	193		75	148	97	110	
Wealth Index											
Poorest	804	79	347	52	326		271	155	229	149	
Poorer	856	62	412	46	336		255	219	230	152	
Middle	849	48	440	44	317		254	234	224	137	
Richer	*855*	45	457	40	313		*203-*	*299+*	*213+*	*140-*	*.20 (2.2)*
Richest	*1099*	52	799	15	233		*275*	*576*	*120+*	*128-*	*.14 (2.0)*

Table 4. Increase in risk of IPV by membership in microfinance programs compared to non-membership displayed with regard to interaction with the woman's educational level and spousal equity (N=4,467). Spousal equity is estimated by household decision-making policies regarding health issues and daily household purchases. The risk increase is given as odds ratios (*OR*) with corresponding 95 % confidence intervals.

			IPV risk increase associated with Microfinance program membership			
Spousal equity	Woman's education	N	Moderate Physical violence OR [95 % CI]	Severe Physical violence OR [95 % CI]	Sexual violence OR [95 % CI]	Any Violence OR [95 % CI]
Health decisions						
Woman	No schooling	956	1.21 [0.93 1.56]	1.07 [0.79 1.44]	0.88 [0.58 1.32]	1.21 [0.93 1.56]
	Primary	865	1.83 [1.39 2.40]	1.65 [1.17 2.33]	0.93 [0.61 1.40]	1.83 [1.40 2.41]
	Secondary	834	2.74 [2.03 3.69]	2.06 [1.31 3.24]	1.34 [0.83 2.14]	2.67 [1.98 3.61]
	Higher	255	3.20 [1.62 6.34]	2.00 [0.65 6.12]	4.55 [1.85 11.19]	3.20 [1.62 6.34]
Other	No schooling	538	1.14 [0.81 1.61]	1.42 [0.94 2.14]	1.00 [0.60 1.65]	1.13 [0.80 1.59]
	Primary	483	1.26 [0.88 1.81]	1.25 [0.77 2.03]	0.79 [0.45 1.39]	1.25 [0.87 1.79]
	Secondary	458	1.23 [0.81 1.86]	1.41 [0.71 2.81]	1.30 [0.63 2.70]	1.22 [0.80 1.84]
	Higher	72	1.47 [0.34 6.44]	15.25 [1.24 187.85]	-	1.47 [0.34 6.44]
Daily purchase decisions						
Women	No schooling	1034	1.11 [0.86 1.42]	1.04 [0.78 1.39]	0.94 [0.62 1.41]	1.10 [0.86 1.41]
	Primary	882	1.92 [1.46 2.51]	1.79 [1.26 2.53]	0.89 [0.57 1.37]	1.90 [1.45 2.49]
	Secondary	840	2.16 [1.61 2.89]	2.06 [1.32 3.23]	1.34 [0.83 2.14]	2.10 [1.57 2.82]
	Higher	249	2.90 [1.44 5.86]	2.80 [0.76 10.32]	4.55 [1.61 12.81]	2.90 [1.44 5.86]
Other	No schooling	460	1.37 [0.94 2.00]	1.57 [1.01 2.42]	0.95 [0.57 1.58]	1.37 [0.94 2.00]
	Primary	466	1.13 [0.78 1.64]	1.07 [0.66 1.75]	0.91 [0.54 1.53]	1.14 [0.79 1.65]
	Secondary	452	1.94 [1.26 2.98]	1.28 [0.61 2.68]	1.28 [0.61 2.68]	1.91 [1.24 2.94]
	Higher	78	2.28 [0.64 8.06]	3.60 [0.74 17.48]	2.49 [0.55 11.25]	2.28 [0.64 8.06]

Figure 1. Study participation displayed according to the STROBE statement.



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Interactions between microfinance programs and non-economic empowerment of women associated with intimate partner violence in Bangladesh

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Abstract

Objective: This study aims to examine associations between microfinance program membership, non-financial empowerment, and intimate partner violence (IPV) in different socioeconomic strata of a nationally representative sample of women in Bangladesh.

Methods: A cross-sectional study was based on a nationally representative interview survey of 11,178 ever-married women of reproductive age (15–49 years). 4465 women having answered the IPV-related questions were analysed separately to identify differences in proportions of exposure to IPV with regard to interactions between microfinance program membership and factors related to non-economic empowerment were considered.

Results: Thirty-nine percent of the women were members of microfinance programs. The overall prevalence of a history of IPV was 48% for moderate physical violence, 16% for severe physical violence, and 16% for sexual violence. For women with secondary or higher education, and women at the two wealthiest levels of the wealth index, microfinance program membership was associated with three and two times increased exposure to IPV, respectively. The least educated and poorest groups showed no change in exposure to IPV associated with microfinance programs. The educated women who were more equal with their spouses in their family relationships by participating in decision-making had an increased exposure to IPV when being members in microfinance programs.

Conclusion: Microfinance plans are associated with increased exposure to IPV among educated and empowered women in Bangladesh. Further prospective studies investigating the causal direction of these associations are warranted.

Key words: Microfinance, Violence against women, Bangladesh, Cross-sectional, DHS.

Article focus:

- Associations between membership in microfinance programs and exposure to intimate partner violence against woman.
- Interactions between empowerment of women through microfinance programs and non-financial empowerment through spousal equity and formal education.

Key messages:

- 51% of women in Bangladesh are victims of any form of intimate partner violence
- Microfinance program membership among empowered women is associated with increased risk for exposure to intimate partner violence.

Strengths and limitations of this study:

- The study was based on a large nationally representative sample from entire Bangladesh
- The cross-sectional study design implies that the results only can be used to hypothesize about IPV causes.

Introduction

A growing body of research has recognized that intimate partner violence (IPV) has far-reaching health and economic impacts for women and societies worldwide [1]. IPV, in all forms, occurs every day in all parts of the world, cutting across age, religion, societal, ethnic and geographic borders. However, women who live in poverty have been reported to be particularly exposed to IPV [2–5]. The association between domestic violence and gender imbalance is also a known consequence of the subordinate status of women [6, 7]. In this context, economic empowerment has been highlighted in policy making to reduce the gender imbalance and to improve the social status of women [8]. Microfinance programs were introduced in the 1990s throughout the developing world as income-generating projects to provide credit and savings services, particularly to poor women lacking a formal education. Relationships between microfinance programs and improved status of child mortality, nutrition, immunization coverage, and contraceptive use have been documented [9–12]. In addition, descriptive epidemiological studies of associations between microfinance programs and IPV have reported promising findings of reduced IPV [13–15], and a recent cluster randomized trial from southern Africa concluded that a combined microfinance and training program reduced IPV among participants [16]. However, studies using qualitative methods [17] have identified microfinance as an exacerbating factor for IPV in Bangladesh. The interactions between microfinance programs, gender issues, education, and IPV thus warrant further epidemiological investigations in low-income countries.

Bangladesh is known globally for its microfinance programs, especially after the acknowledgment from the Nobel Committee [18]. This study set out to examine the associations between membership in microfinance programs, non-financial empowerment, and exposure to

IPV in different strata of a nationally representative sample of women in Bangladesh. In previous research, microfinance programs have been regarded as a general vehicle for the empowerment and emancipation of women [4]. Simultaneously, IPV in Bangladesh has been reported as a socio-medical problem closely related to gender inequality and the position of women in society [5, 19]. Therefore, we also wanted to study the interactions between empowerment of women through microfinance and non-economic empowerment through spousal equity and formal education.

Methods

The study was based on a cross-sectional design, implemented in Bangladesh through a nationally representative household survey. Reporting of the study was organized according to the *Strengthening the Reporting of Observational Studies in Epidemiology* (STROBE) statement [20].

Insert figure 1

Data collection

Data collection was conducted by an interview survey in all six administrative divisions of Bangladesh: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, and Sylhet. Details of the survey are available at http://www.measuredhs.com/pubs/pdf/FR207/FR207[April-10-2009].pdf. The survey was designed to be representative for most of the demographic indicators for the country as a whole, for each of the six divisions, and for the urban and the rural areas separately. Initially, multistage cluster sampling was used, based on the 2001 population census. In total, 361 representative sample clusters were identified, 227 in rural areas and 134 in urban areas. From

the sample clusters, 10,819 households were identified for the survey initially. Of these households, 10,416 were found to be occupied, and 10,400 were available for the survey. All ever-married women of reproductive age (15–49 years) who slept in the selected households the night before the survey were defined as being eligible for the present study. From the survey households, 11,178 eligible women were identified for interview.

A total of 128 experienced field staff, trained for the task, in 12 interview teams conducted the interviews. Each team consisted of one male supervisor, one female field editor, five female interviewers, two male interviewers, and one logistics staff member. Four quality control teams ensured data quality; each team included one male and one female data quality control worker. In the presence of the perpetrator, interviewing the victim carries the risk of further violence. Therefore, interviewers received special training on conducting an interview on spousal violence based on a training manual focusing on collecting date on violence in a secure, confidential, and ethical manner. Moreover, the IPV questionnaires were administered at the end of the interview, enabling both the interviewer and the respondent to become well acquainted with each other by the time they were discussing IPV issues [21]. The interview teams were also prepared to help the women (respondents) if they asked for assistance, such as helping them to go to the women's shelter, an organization assisting distressed women. The face-to-face interview took place in a safe and secure place. If privacy could not be secured for the woman, the interviewers did not ask IPV-related questions.

The survey obtained detailed information on demographics, salient health issues, and issues related to domestic violence. The current study utilized variables covering IPV and membership of a microfinance program. The following variables were used.

Intimate partner violence

The survey data collected on IPV within the most recent 12 months (with the latest/current husband) were transformed into the following variables:

- Moderate physical violence: had the husband ever pushed, shaken, or thrown something; ever slapped; ever punched with a fist or something harmful; ever kicked or dragged.
- Severe physical violence: had the husband ever tried to choke or burn; ever threatened with a knife/gun or other weapon; ever attacked with a knife/gun or other weapon.
- Sexual violence: had the husband ever physically forced sex when not wanted.
- Any violence: having been exposed to at least one of the types of IPV defined above.

All IPV variables measured spousal violence with a shortened and modified Conflict Tactics Scale (CTS) [22].

Microfinance programs

Microfinance program membership was coded for respondents who belonged to any of the following organizations: Grameen Bank, BRDB, BRAC, ASHA, PROSHIKA, or any microcredit organization. These are the best-known and popular government-approved organizations providing microfinance credit.

Spousal equity

Household decision making was used as a proxy measure for gender equity in family relations. Specifically, spousal equity was measured through two variables:

Household decision making on own health issues: respondent alone; jointly by respondent and her husband; respondent and other family members; respondent's husband; someone else in the family.

Household decision making in household purchase issues: respondent alone; jointly by respondent and her husband; respondent and other family members; respondent's husband; someone else in the family.

The sociodemographic variables used in the present study were respondent age (15–19, 20–24, 25–29, 30–34, 35–39, 40–44, and 45–49 years), rural–urban residency, education (no education, primary school, secondary school, and higher education), religion (Muslim and non-Muslim), and whether household head was male or female. Economic status was estimated using the wealth index. This index, which divides populations into five economic quartiles (poorest, poorer, middle, richer, and richest), is widely used for measuring economic status in developing countries [23].

Statistical analysis

Interactions between etiological factors were investigated by analyses of statistical associations between exposure to IPV and membership in microfinance programs (that is, differences in proportions of exposure to IPV based on microfinance membership or not) under different socio-demographic conditions. Such interactions were investigated for each condition covered by seven socio-demographic variables (age, residence, education, religion, household decision-making, marital status, and wealth index) by Chi-square tests of proportions using Cramer's *V* as a measure of effect size (.10=low, .30=moderate, .50=strong) and with Bonferroni corrections for multiple comparisons. Effect sizes smaller than .10 were not considered meaningful and are

therefore not reported. Odds ratios (OR) were calculated to indicate the increase in exposure to IPV associated with membership in microfinance programs compared with non-membership.

To examine whether the association between IPV and microfinance membership changed under different conditions covered by each of the seven socio-demographic variables, the association was combined with each socio-demographic variable (in seven three-way interactions, e.g. the IPV*microfinance program membership*age-group was analysed with loglinear analyses using backward elimination of highest order interaction(s). In case of a significant three-way interaction, the association between IPV and microfinance membership was investigated by Chi-square test of proportions over the conditions of the demographic variable.

To examine whether the association between IPV and microfinance membership differed over different pairwise conditions within each of the demographic variables (21 four-way interactions, e.g. the IPV*microfinance program membership*age-group*residence) were tested using loglinear analysis. In case of a significant four-way interaction, one of the demographic variables was removed and a loglinear analysis with the remaining three-way interaction was made for each condition of the removed variable.

When investigating the higher order interactions the categories used for marital status were re-coded to living together (married or 'living together') or not (widowed, divorced, 'not living together'). The categories used for the household decision-making variables were re-coded to woman deciding (decision was made by respondent alone, jointly by respondent and her

husband, or by respondent and other family members) and others deciding (decision was made by respondent's husband or by someone else in the family).

IBM SPSS Statistics Version 20 was used for all statistical analyses.

Ethical considerations

Ethical approval for the survey was obtained from the Institutional Review Board of Opinion Research Corporation (ORC), Macro International Incorporated. Informed consent was obtained from the participants before the start of the survey; the right to withdraw and guarantee of privacy was emphasized to the respondents throughout the survey. The field workers received specific training and support to deal with issues such as domestic violence. The standards on ethical and safety recommendations for research on domestic violence, which are set by the World Health Organization (WHO), were strictly adhered to. The WHO recommendations aim toward ensuring women's safety while maximizing disclosure of actual violence [24].

Results

Out of 11,178 eligible women, 10,996 (98.4%) were interviewed; 4465 (41%) of these primary survey participants responded to the IPV-related questions (Fig. 1). The respondents to the IPV-related questions were more frequently members of microfinance programmes (39%), compared with non-respondents (35%) (Table 1). It was also found that, among those who responded to the IPV questions, microfinance program membership was slightly more common among rural women and women from households with a male head compared with non-responders.

Insert Table 1 about here

Fifty-one percent (*n*=2275 of 4465) of the women who responded to the IPV questions had been victims of some form of domestic violence (Table 2). The specific exposures reported were 48% for moderate physical violence, 16% for severe physical violence, and 11% for sexual violence. Having no formal education and belonging to the poorest group, according to the wealth index, were the socio-demographic risk factors most strongly associated with exposure to IPV. Rural residents had a slightly increased proportional rate of exposure to physical and sexual violence, and Muslim women were more exposed to IPV than their non-Muslim peers.

Insert Table 2 about here

For women with secondary school or higher education, microfinance program membership was associated with a two- or three fold increase in exposure to IPV, respectively (Table 3). Similarly, women at the two wealthiest levels of the wealth index showed a twofold increase in exposure to IPV associated with program membership. The least educated and poorest groups showed no change in IPV exposure associated with microfinance program membership. For moderate physical violence the association between IPV and microfinance was different for women living with a man or not. Microfinance membership was only significantly associated with higher levels of IPV for women living together with a man at the time of the study (Cramer's V=.15, Odds Ratio (OR)=1.8 (95% Confidence Interval (CI95): 1.6-2.1)). For moderate as well as for severe physical violence, the association between IPV and microfinance membership was significantly associated with the wealth index. Microfinance membership was significantly associated with higher levels of IPV for the richer (Cramer's V=.20, OR=2.3 (CI95:

1.7-3.0)) and richest groups (Cramer's V=.15, OR=2.0 (CI95: 1.5-2.7)) when considering moderate physical violence and for the richer group (Cramer's V=.17, OR=2.5 (CI95: 1.8-3.6)) when considering severe physical violence.

Insert Table 3 about here

Spousal equity – represented by health-care decision making – and formal education showed a significant four-way interaction with IPV – represented by *moderate physical violence* – and microfinance membership indicating that the association between IPV and microfinance membership is different over different combinations of spousal equity and formal education. Further examination showed that for women with formal education there was an interaction between spousal equity and the association between IPV and microfinance membership, while there was no such an interaction for women without formal education. For women with formal education who are participating in health-care decisions, there was a significant association between IPV and microfinance program membership (Cramer's V=.22, OR=2.5 CI95: 2.1-3.1). The same interactions were also found for decision-making about daily purchases (Cramer's V=.20, OR=2.3 CI95: 1.9-2.8). For severe physical violence, the patterns were similar for daily purchase but with smaller effect size (Cramer's V=.13, OR=2.2 CI95: 1.7-2.9).

Residence and religion showed a significant four-way interaction with IPV – represented by *severe physical violence* – and microfinance membership indicating that the association between IPV and microfinance membership is different over different combinations of residence and

religion. Further examination showed that for Muslim women, residence showed no interaction with the association between IPV and microfinance membership, while there was such an interaction for non-Muslim women. While there was no increase in severe physical violence associated with microfinance program membership for non-Muslim women in rural areas, there was such an association for non-Muslim women in urban areas (Cramer's V=.20, OR=4.6 CI95: 1.2-17.8).

Sexual violence did not show any statistically significant association with microfinance activities.

More detailed analyses of associations between IPV and membership in microfinance programs for different representations of spousal equity and formal education indicated higher risks for women participating in decision making about management of their own health issues and who had a higher formal education than primary school (Table 4). These more empowered women were between two to three times more exposed to spousal violence if they also were members of microfinance programs. Among these women, those with the highest formal education were at more than four times higher risk of sexual violence when associated with microfinance than when not. No increase in IPV risk associated with membership in microfinance programs was observed for women who were not involved in decision making about management of their own health issues. In addition, using decision making on household purchases as a proxy for spousal equity, the women with formal education experienced increased spousal violence when they were also members of microfinance programs. No such increase in IPV risk associated with

microfinance was observed for women who were not involved in decision making on household purchases.

Insert Table 4 about here

Discussion

Several previous epidemiological studies of IPV [13–15], including an early study from rural Bangladesh [9], have reported a protective effect of microfinance programs. Our results do not support the assertion that microfinance generally reduces IPV. The results from our study showed a pattern where microfinance was associated with increased exposure to IPV among women with a formal education. However, educated program members were less exposed to IPV if they were not involved in the family affairs, i.e. no increase in IPV was observed in households where the wife was associated with microfinance but excluded from the day-to-day decision making. Sexual violence was less clearly associated with different risk of IPV when being part of a microfinance program. This finding of different patterns between sexual and physical violence hypothesize existence of differences in the causes of sexual and physical IPV, which is in accordance with several previous studies from Bangladesh [5, 25–30].

There are several limitations that have to be taken into account when interpreting the current results. The study used a cross-sectional design, implying that the results only can be used to hypothesize about IPV causes. However, the observation that formally educated microfinance program members who participated in household decision making were more exposed to IPV

suggests that either disagreements between spouses related to the management of household resources were linked to IPV, or that formally educated women who participate in household decision making are more able to free themselves from an established IPV pattern by participating in microfinance programs. The current study does not include dowry demands. Therefore, possible effects of dowry demands and/or microfinance plans on IPV are not explored here. Nonetheless, a recent study reports that dowry is uncommon among educated women in Bangladesh [31]. Other mechanisms linking microfinance with IPV are more likely to explain these association patterns. Even though the formally educated women were generally less exposed to IPV, microfinance loans may have caused more economic stress in this group due to larger business projects and multiple loans. It is possible that solidarity circles, which extend informal economic reciprocity beyond the family to the local community, were accepted as security for the microfinance loans among the poor. In contrast, formal security limited to the family may have been more common among the more wealthy and educated women. Such circumstances could explain why microfinance in the educated group reported more IPV exposure in interaction with non-financial empowerment, i.e. by shared household decision making [9]. Hence, there may have been fewer conflicts in households where the wife was not empowered mainly because husbands managed the loans in these households single-handedly. In addition, data on when the women joined the microfinance programs were not collected in the study. Thus, associations between the microfinance program membership phase and occurrence of IPV could not be examined. Thus, further research is needed on the mechanisms by which repayment of microfinance loans is associated with IPV among empowered women in developing countries [23].

Even though the initial survey response rate was 98%, the rate of response to the IPV-related questions was only 39%. However, we found only minor differences in relation to sociodemographic variables between responders and non-responders. Whilst the socio-demographic chosen variables were similar, there may be differences not investigated, such as greater severity or threat of violence, which prevented disclosure among non-responders. Moreover, response bias may have resulted from recall bias or deliberate unwillingness to disclose a history of domestic violence. Participants may have been reluctant to disclose their own victimization of IPV, given the sensitive nature of the questions and the strong social stigma. Under-reporting of events in association with the IPV-related questions may therefore have reduced the primary rates. Nonetheless, we do not expect that such under-reporting influenced the analyses of associations between IPV, microfinance program membership, spousal equity, and the woman's educational level. The analysis included numerous statistical tests but, with corrections for multiple comparisons, the family-wise error rate was maintained at a reasonable level. The effect sizes were low to moderate. The results are relevant at a group level, but another research design is needed to examine the factors that identify individual women at different risks for IPV.

In accordance with previous research [3, 5, 9], about every second woman in our study reported having been a victim of IPV. There is thus ample evidence that women in Bangladesh and other countries in the Indian subcontinent suffer from a heavy burden of IPV, and the identification of predisposing factors as well as countermeasures has recently been called for in this region [25]. We found that microfinance program membership was not associated with a decreased level of IPV in any population strata. Membership was associated with higher IPV exposure among

women with a formal education. However, our findings should be interpreted in light of the limitations of the study, i.e. that a cross-sectional design was used and there was a considerable non-response to the IPV-related survey questions. Other studies in different countries have indicated that association with microfinance reduces IPV exposure [13–15]. The findings in this study raise the question that association with microfinance are not always associated with reduced levels of IPV. Therefore additional prospective studies in different settings are warranted to study mechanisms by which economic stress might be a contributing factor for IPV associated with microfinance, as well as on the effects resulting from interactions between economic and non-economic empowerment.

The results of this study still have policy implications. Microfinance programs in Bangladesh make claims in their marketing campaigns about social responsibility. These organizations can therefore be expected to act with particular social conscientiousness. According to the results of this study, microfinance firms should be aware that program membership may increase IPV exposure among women belonging to risk groups. Alternatively, microfinance firms should inform applicants that microfinance program membership among formally educated women may increase the risk for exposure to IPV. However, before demands to provide information about risk for IPV can be put on microfinance firms, the identification of risk groups should be confirmed in prospective studies.

Conflict of interest: None declared.

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Figure 1. Study participation displayed according to the STROBE statement.

Table 1. Membership in microfinance programs (%) among the survey participants (N = 10,996) divided by response and non-response to the IPV question and displayed by age, residence, education, religion, sex of household head, and household wealth index. The Chi-square tests are presented for differences in distribution of microfinance program membership between the respondents and the non-respondents to IPV questions.

	Respondents to IPV questions		**Non-respondents to IPV questions**		**Total**	
	n	Microfinance (%)	n	Microfinance (%)	n	Microfinance (%)
Age (years)						
15–19	462	29	886	23	1348	25
20–24	851	36	1323	31	2174	33
25–29	866	43	1069	37	1935	40
30–34	743	40	918	39	1661	39
35–39	701	41	895	41	1596	41
40–44	462	42	756	38	1218	39
45–49	380	36	684	35	1064	35
Residence						
Urban	1669	36	2482	33	4151	34
Rural*	2796	40+	4049	36	6845	37
Education†						
No education*	1495	45+	2030	40-	3525	42
Primary	1348	44	1920	40	3268	42
Secondary	1293	31	2052	29	3345	30
Higher	327	19	528	19	855	19
Religion						
Muslim*	4034	38+	5890	34	9924	35
Non-Muslim	431	48	641	41	1072	44
Household head						
Female	505	25	803	27	1308	26
Male*	3960	40+	5728	36-	9688	38
Marital Status						
Married*	4194	39+	5952	35-	10146	37
Widowed	149	38	317	29	466	32
Divorced	37	25	102	20	139	24
Not living together	85	25	160	28	245	27
Wealth index						
Poorest	804	47	971	41	1775	44
Poorer	857	45	1138	42	1995	43
Middle	849	43	1246	39	2095	41
Richer	856	41	1345	37	2201	39
Richest	1099	23	1831	22	2930	22
Total*	4465	39+	6531	35-	10996	36

Significance for the chi-square test is denoted by * ($p < .05$, Bonferroni corrected for 26 comparisons). Standardized residuals >2 are indicated by + and standardized residuals <–2 are indicated by –. † Based on N = 10,993 due to missing data.

Table 2. Reported IPV in the final study population ($N = 4{,}465$) given as percentages and displayed by age, residence, education, religion, sex of household head, and household wealth index. Chi-square tests are presented for differences in distributions related to each of the variables: age, residence, education, religion, household head, marital status and wealth index.

	n	Moderate physical violence %	Severe physical violence %	Sexual violence %	Any violence %
Age (years)				$p < .001$, $V = .10$	
15–19	462	42	14	15+	46
20–24	851	47	14	15+	50
25–29	866	49	17	12	52
30–34	743	51	18	10	55
35–39	701	48	17	9	50
40–44	462	49	19	7–	50
45–49	380	49	17	5–	51
Residence					
Urban	1669	46	16	9	47
Rural	2796	49	17	12	53
Education†		$p < .001$, $V = .22$	$p < .001$, $V = .17$		$p < .001$, $V = .21$
No education	1495	58+	23+	12	60+
Primary	1348	52+	18	12	55+
Secondary	1293	39–	10–	9	42–
Higher	327	20–	6–	8	24–
Religion					
Muslim	4034	49	17	11	52
Non-Muslim	431	38	10	6	40
Household head					
Female	505	44	16	11	47
Male	3960	49	16	11	52
Marital Status			$P < .001$, $V = .11$		
Married	4194	48	16	10	51
Widowed	149	44	14	11	48
Divorced	37	62	43+	19	62
Not living together	85	66	38+	24	66
Wealth index		$p < .001$, $V = .18$	$p < .001$, $V = .14$	$p < .001$, $V = .11$	$p < .001$, $V = .19$
Poorest	804	58+	22+	16+	62+
Poorer	857	53+	19	13	57+
Middle	849	53+	18	11	56+
Richer	856	46	18	10	49
Richest	1099	34–	8–	6–	36–
Total	4465	48	16	11	51

Significant chi-square tests ($p < .05$, Bonferroni corrected for 7 tests per column) are reported by p values and effect size V (Cramer's V). Standardized residuals >2 are indicated by + and standardized residuals <–2 are indicated by –.

† Based on N = 4463 due to missing data.

Table 3. Associations between IPV and membership in microfinance (MF) programs in different sociodemographic strata (n = 4,465). Significant chi-square tests for exposure to IPV and belonging to MF programs are reported by their effect sizes (Cramer's *V*). Odds ratios with 95% confidence intervals (OR; CI95) indicate increased risk for IPV for women belonging to MF programs compared with women who did not belong to such programs. Only significant tests ($p < .05$, Bonferroni corrected for 104 tests) are reported as significant and standardized residuals >2 are indicated by + and standardized residuals <–2 are indicated by –.

		Moderate physical violence					Severe physical violence				
		No microfinance		Microfinance		*V* (OR; CI95)	No microfinance		Microfinance		*V* (OR; CI95)
	n	IPV	No IPV	IPV	No IPV		IPV	No IPV	IPV	No IPV	
Age (years)											
15–19	462	123	204	72	63		47	280	17	118	
20–24	*851*	*218-*	*327+*	*179+*	*127-*	*.18 (2.1; 1.6-2.8)*	*58-*	*487*	*62+*	*244*	*.13 (2.1; 1.4-3.2)*
25–29	866	216	279	205	166		73	422	75	296	
30–34	743	207	238	175	123		68	377	64	234	
35–39	*701*	*173*	*243*	*160+*	*125-*	*.14 (1.8; 1.3-2.4)*	55	361	62	223	
40–44	*462*	*114*	*156*	*114+*	*78-*	*.17 (2.0; 1.4-2.9)*	39	231	47	145	
45–49	380	114	129	74	63		37	206	27	110	
Residence											
Urban	*1669*	*418-*	*645+*	*345+*	*261-*	*.17 (2.0; 1.7-2.5)*	*138-*	*925*	*121+*	*485*	.
Rural	*2796*	*747-*	*931+*	*634+*	*484-*	*.12 (1.6; 1.4-1.9)*	*239-*	*1439*	*233+*	*885*	
Education†											
No education	1495	463	363	402	267		181	645	166	503	
Primary	*1348*	*356-*	*400+*	*348+*	*244-*	*.12 (1.6; 1.3-2.0)*	115	641	126	466	
Secondary	*1293*	*302-*	*591+*	*207+*	*193-*	*.17 (2.1; 1.7-2.7)*	70	823	55	345	
Higher	327	44	220	22	41		11	253	7	56	
Religion											
Muslim	*4034*	*1093-*	*1425+*	*886+*	*630-*	*.15 (1.8; 1.6-2.1)*	*357-*	*2161*	*330+*	*1186-*	*.10 (1.7; 1.3-2.2)*
Non-Muslim	431	72	151	93	115		20	203	24	184	
Household head											
Female	505	154	227	66	58		53	328	28	96	
Male	3960	*1011-*	*1349+*	*913+*	*687-*	*.14 (1.8; 1.6-2.0)*	*324-*	*2036+*	*326+*	*1274-*	
Marital Status											
Married	*4194*	*1071*	*1490*	*930*	*704*	*.15 (1.8; 1.6-2.1)*	*330*	*2230*	*332*	*1302*	*.10 (1.7; 1.4-2.0)*
Widowed	149	40	54	26	30		11	82	10	46	
Divorced	37	14	10	9	4		10	14	6	7	
Not living together	85	42	22	14	7		26	38	6	15	
Wealth Index											
Poorest	804	249	177	219	159		96	330	84	294	
Poorer	857	234	240	221	162		84	390	77	306	
Middle	849	237	251	217	144		77	411	76	285	
Richer	*856*	*191-*	*311+*	*207+*	*147-*	*.20 (2.3; 1.7-3.0)*	*60-*	*442*	*90+*	*264*	*.17 (2.5; 1.8-3.6)*
Richest	*1099*	*254*	*597*	*115+*	*133-*	*.15 (2.0; 1.5-2.7)*	60	791	27	221	

		Sexual violence					Any violence				
		No microfinance		Microfinance		*V* (OR)	No microfinance		Microfinance		*V* (OR)
	N	IPV	No IPV	IPV	No IPV		IPV	No IPV	IPV	No IPV	
Age											

15–19	462	52	275	15	120	139	188	75	60	
20–24	*851*	83	462	42	264	*245*	*300*	*184+*	*122-*	*.15 (1.8; 1.4-2.5)*
25–29	*866*	47	448	54	317	*231*	*264*	*221+*	*150-*	*.13 (1.7; 1.3-2.2)*
30–34	743	42	403	34	264	223	222	182	116	
35–39	701	29	387	35	250	183	233	164	121	*.13 (1.7;1.3-2.3)*
40–44	*462*	19	251	12	180	*117*	*153*	*116*	76-	*.17 (2.0; 1.4-2.9)*
45–49	*380*	14	229	5	132	120	123	75	62	
Residence										
Urban	*1669*	90	973	64	542	*436-*	*627+*	*355+*	*251-*	*.17 (2.0; 1.6-2.5)*
Rural	*2796*	196	1482	133	985	*822-*	*856+*	*662+*	*456-*	*.10 (1.5; 1.7-5.3)*
Education										
No education	1495	101	725	76	593	486	340	415	254	
Primary	1348	96	660	67	525	389	367	359	233	
Secondary	*1293*	74	819	43	357	*330-*	*563+*	*216+*	*184-*	*.16 (2.0; 1.6-2.5)*
Higher	*327*	15	249	11	52	*53*	*211*	*27+*	*36*	*.21 (3.0; 1.7-5.3)*
Religion										
Muslim	*4034*	276	2242	183	1333	*1183-*	*1335+*	*920+*	*596-*	*.13 (1.7; 1.5-2.0)*
Non-Muslim	431	10	213	14	194	75	148	97	111	
Household head										
Female	505	44	337	12	112	167	214	68	56	
Male	3960	242	2118	185	1415	*1269+*	*1091-*	*949+*	*651-*	*.13(1.3; 1.1-2.4)*
Marital Status										
Married	4194	255	2306	185	1449	*1157*	*1403*	*967*	*667*	*.14 (1.8; 1.6-2.0)*
Widowed	149	12	82	5	51	45	48	27	29	
Divorced	37	5	19	2	11	14	10	9	4	
Not living together	85	15	49	5	16	42	22	14	7	
Wealth Index										
Poorest	804	79	347	52	326	271	155	229	149	
Poorer	857	62	412	46	337	255	219	230	153	
Middle	849	48	440	44	317	254	234	224	137	
Richer	*856*	45	457	40	314	*203-*	*299+*	*214+*	*140-*	*.20 (2.3; 1.7-3.0)*
Richest	*1099*	52	799	15	233	*275*	*576*	*120+*	*128-*	*.14 (2.0; 1.5-2.6)*

† Based on N = 4,463 due to missing data.

Table 4. Increase in IPV by membership in microfinance programs compared with non-membership displayed with regard to interaction with the woman's educational level and spousal equity (N=4 463, there were missing data for two participants on woman's education). Spousal equity is estimated by household decision-making policies regarding health issues and daily household purchases. The risk increase is given as the odds ratios (OR) with corresponding 95% confidence intervals.

			Increase in IPV associated with microfinance program membership			
Spousal equity	Woman's education	n	Moderate physical violence OR [95% CI]	Severe physical violence OR [95% CI]	Sexual violence OR [95% CI]	Any violence OR [95% CI]
Health decisions						
Woman	No schooling	957	1.20 [0.92 1.55]	1.06 [0.79 1.43]	0.88 [0.58 1.32]	1.16 [0.89 1.51]
	Primary	865	1.83 [1.39 2.40]	1.65 [1.17 2.33]	0.93 [0.61 1.40]	1.70 [1.29 2.24]
	Secondary	834	2.74 [2.03 3.69]	2.06 [1.31 3.24]	1.34 [0.83 2.14]	2.69 [2.00 3.63]
	Higher	255	3.20 [1.62 6.34]	2.00 [0.65 6.12]	4.55 [1.85 11.19]	3.95 [2.06 7.58]
Other	No schooling	538	1.14 [0.81 1.61]	1.42 [0.94 2.14]	1.00 [0.60 1.65]	1.10 [0.78 1.56]
	Primary	483	1.26 [0.88 1.81]	1.25 [0.77 2.03]	0.79 [0.45 1.39]	1.10 [0.76 1.57]
	Secondary	459	1.25 [0.83 1.89]	1.51 [0.77 2.97]	1.29 [0.62 2.68]	1.14 [0.76 1.71]
	Higher	72	1.47 [0.34 6.44]	15.25 [1.24 187.85]	0 [-]	1.05 [0.24 4.51]
Daily purchase decisions						
Women	No schooling	1034	1.11 [0.86 1.42]	1.04 [0.78 1.39]	0.94 [0.62 1.41]	1.09 [0.85 1.40]
	Primary	882	1.92 [1.46 2.51]	1.79 [1.26 2.53]	0.89 [0.57 1.37]	1.70 [1.30 2.22]
	Secondary	840	2.16 [1.61 2.89]	2.06 [1.32 3.23]	1.34 [0.83 2.14]	2.08 [1.56 2.78]
	Higher	249	2.90 [1.44 5.86]	2.80 [0.76 10.32]	4.55 [1.61 12.81]	3.02 [1.54 5.91]
Other	No schooling	461	1.35 [0.93 1.97]	1.55 [1.00 2.40]	0.95 [0.57 1.57]	1.27 [0.87 1.86]
	Primary	466	1.13 [0.78 1.64]	1.07 [0.66 1.75]	0.91 [0.54 1.53]	1.07 [0.74 1.56]
	Secondary	453	1.97 [1.28 3.03]	1.48 [0.68 2.87]	1.27 [0.61 2.66]	1.84 [1.20 2.81]
	Higher	78	2.28 [0.64 8.06]	3.60 [0.74 17.48]	2.49 [0.55 11.25]	3.29 [0.97 11.19]

Interactions between microfinance programs and non-economic empowerment of women associated with intimate partner violence in Bangladesh

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Running title: Microfinance and violence against women (2807 words)

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Abstract

Objective: This study aims to examine ~~the~~ associations between microfinance program membership, non-financial empowerment, and intimate partner violence (IPV) in different socioeconomic strata of a nationally representative sample of women in Bangladesh.

Methods: ~~The~~A cross-sectional study was based on a nationally representative interview survey of 11,178 ever-married women of reproductive age (15–49 years). 4465 women having answered the IPV-related questions were ~~analyzed~~analysed separately ~~using chi-square tests and Cramer's V as a measure of effect size~~ to identify differences in proportions of exposure to IPV with regard to ~~microfinance program membership and demographic variables and~~ interactions between microfinance program membership and factors related to non-economic empowerment were considered.

Results: ~~Only 39%~~Thirty-nine percent of the women were members of microfinance programs. The overall prevalence of a history of IPV was 48% for moderate ~~and~~physical violence, 16% for severe physical violence, and 16% for sexual violence. For women with secondary or higher education, and women at the two wealthiest levels of the wealth index, microfinance program membership was associated with three and two times increased ~~the~~ exposure to IPV ~~two three and two times~~, respectively. The least educated and poorest groups showed no change in exposure to IPV associated with microfinance programs. The educated women who were more equal with their spouses in their family relationships by participating in decision-making had an increased ~~their~~ exposure to IPV ~~by membership~~when being members in microfinance programs.

Conclusion: Microfinance plans are associated with increased exposure to IPV among educated and empowered women in Bangladesh. ~~Microfinance firms should consider providing information about associations between microfinance and IPV to the women belonging to risk~~

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~~groups~~Further prospective studies investigating the causal direction of these associations are warranted.

Key words: Microfinance, Violence against women, Bangladesh, Cross-sectional, DHS.

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Article focus:

- Associations between membership in microfinance programs and exposure to intimate partner violence against woman.
- Interactions between empowerment of women through microfinance programs and non-~~economic~~financial empowerment through spousal equity and formal education.

Key messages:

- 51% of ~~the~~ women ~~respondents~~in Bangladesh are victims of any form of intimate partner violence
- ~~For different socioeconomic backgrounds, micro finance association of the~~Microfinance program membership among empowered women ~~enhances their~~ is associated with increased risk for exposure to intimate partner violence.
- ~~Equity in family decision making for the educated women increased the exposure to IPV by membership in microfinance programs.~~

Strengths and limitations of this study:

- ~~National~~The study was based on a large nationally representative sample from entire Bangladesh
- ~~Cross~~The cross-sectional study design implies that the results only can be used to hypothesize about IPV causes.

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Introduction

A growing body of research has recognized that intimate partner violence (IPV) has far-reaching health and economic impacts for women and societies worldwide [1]. IPV, in all forms, occurs every day in all parts of the world, cutting across age, religion, societal, ethnic and geographic borders. However, women who live in poverty have been reported to be particularly exposed to IPV [2–5]. The association between domestic violence and gender imbalance is also a known consequence of the subordinate status of women [6, 7]. In this context, economic empowerment has been highlighted in policy making to reduce the gender imbalance and to improve the social status of women [8]. Microfinance programs were introduced in the 1990s throughout the developing world as income-generating projects to provide credit and savings services, particularly to poor women lacking a formal education. Relationships between microfinance programs and improved status of child mortality, nutrition, immunization coverage, and contraceptive use have been documented [9–12]. In addition, descriptive epidemiological studies of associations between microfinance programs and IPV have reported promising findings of reduced IPV [13–15], and a recent cluster randomized trial from southern Africa concluded that a combined microfinance and training program reduced IPV among participants [16]. However, studies using qualitative methods [17] have identified microfinance as an exacerbating factor for IPV in Bangladesh. The interactions between microfinance programs, gender issues, education, and IPV thus warrant further epidemiological investigations in low-income countries.

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Bangladesh is known globally for its microfinance programs, especially after the acknowledgment from the Nobel Committee [18]. This study set out to examine the associations between membership in microfinance programs, non-financial empowerment, and exposure to IPV in different strata of a nationally representative sample of women in Bangladesh. In previous research, microfinance programs have been regarded as a general vehicle for the empowerment and emancipation of women [4]. Simultaneously, IPV in Bangladesh has been reported as a socio-medical problem closely related to gender inequality and the position of women in society [5, 19]. Therefore, we also wanted to study the interactions between empowerment of women through microfinance and non-economic empowerment through spousal equity and formal education.

Methods

The study was based on a cross-sectional design, implemented in Bangladesh through a nationally representative household survey. Reporting of the study was organized according to the *Strengthening the Reporting of Observational Studies in Epidemiology* (STROBE) statement [20].

Insert figure 1

Data collection

Data collection was conducted by an interview survey in all six administrative divisions of Bangladesh: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, and Sylhet. Details of the survey are available at http://www.measuredhs.com/pubs/pdf/FR207/FR207[April-10-2009].pdf. The

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survey was designed to be representative for most of the demographic indicators for the country as a whole, for each of the six divisions, and for the urban and the rural areas separately. Initially, multistage cluster sampling was used, based on the 2001 population census. In total, 361 representative sample clusters were identified, 227 in rural areas and 134 in urban areas. From the sample clusters, 10,819 households were identified for the survey initially. Of these households, 10,416 were found to be occupied, and 10,400 were available for the survey. All ever-married women of reproductive age (15–49 years) who slept in the selected households the night before the survey were defined as being eligible for the present study. From the survey households, 11,178 eligible women were identified for interview.

A total of 128 experienced field staff, trained for the task, in 12 interview teams conducted the interviews. Each team consisted of one male supervisor, one female field editor, five female interviewers, two male interviewers, and one logistics staff member. Four quality control teams ensured data quality; each team included one male and one female data quality control worker. In the presence of the perpetrator, interviewing the victim carries the risk of further violence. Therefore, interviewers received special training on conducting an interview on spousal violence based on a training manual focusing on collecting date on violence in a secure, confidential, and ethical manner. Moreover, the IPV questionnaires were administered at the end of the interview, enabling both the interviewer and the respondent to become well acquainted with each other by the time they were discussing IPV issues [21]. The interview teams were also prepared to help the women (respondents) if they asked for assistance, such as helping them to go to the women's shelter, an organization assisting distressed women. The face-to-face interview took place in a safe and secure place. If privacy could not be secured for the woman, the interviewers did not

ask IPV-related questions.

The survey obtained detailed information on demographics, salient health issues, and issues related to domestic violence. The current study utilized variables covering IPV and membership of a microfinance program. The following variables were used.

Intimate partner violence

The survey data collected on IPV within the most recent 12 months (with the latest/current husband) were transformed into the following variables:

- Moderate physical violence: had the husband ever pushed, shaken, or thrown something; ever slapped; ever punched with a fist or something harmful; ever kicked or dragged.
- Severe physical violence: had the husband ever tried to choke or burn; ever threatened with a knife/gun or other weapon; ever attacked with a knife/gun or other weapon.
- Sexual violence: had the husband ever physically forced sex when not wanted.
- Any violence: having been exposed to at least one of the types of IPV defined above.

All IPV variables measured spousal violence with a shortened and modified Conflict Tactics Scale (CTS) [22].

Microfinance programs

Microfinance program membership was coded for respondents who belonged to any of the following organizations: Grameen Bank, BRDB, BRAC, ASHA, PROSHIKA, or any microcredit organization. These are the best-known and popular government-approved organizations providing microfinance credit.

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Spousal equity

Household decision making was used as a proxy measure for gender equity in family relations. Specifically, spousal equity was measured through two variables:

Household decision making on own health issues: respondent alone; jointly by respondent and her husband; respondent and other family members; respondent's husband; someone else in the family.

Household decision making in household purchase issues: respondent alone; jointly by respondent and her husband; respondent and other family members; respondent's husband; someone else in the family.

The sociodemographic variables used in the present study were respondent age (15–19, 20–24, 25–29, 30–34, 35–39, 40–44, and 45–49 years), rural–urban residency, education (no education, primary school, secondary school, and higher education), religion (Muslim and non-Muslim), and whether household head was male or female. Economic status was estimated using the wealth index. This index, which divides populations into five economic quartiles (poorest, poorer, middle, richer, and richest), is widely used for measuring economic status in developing countries [23].

Statistical analysis

~~Chi-square tests were used to examine~~Interactions between etiological factors were investigated by analyses of statistical associations between exposure to IPV and membership in microfinance programs (that is, differences in proportions of exposure to IPV ~~(moderate physical, severe physical, sexual, and any violence) and association between microfinance and~~ based on microfinance membership or not) under different socio-demographic conditions. Such

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interactions were investigated for each condition covered by seven socio-demographic variables (age, residence, education, religion, household decision-making, marital status, and wealth index) ~~with~~ by Chi-square tests of proportions using Cramer's *V* as a measure of effect size (.10=low, .30=moderate, .50=strong) and with Bonferroni corrections for multiple comparisons. Effect sizes smaller than .10 were not considered meaningful and are therefore not reported. Odds ratios (OR) were calculated to indicate the increase in exposure to IPV associated with membership in microfinance programs compared with non-membership. ~~For analysis of interaction effects between spousal equity and microfinance programs in relation to the sociodemographic variables found associated with IPV, the~~

To examine whether the association between IPV and microfinance membership changed under different conditions covered by each of the seven socio-demographic variables, the association was combined with each socio-demographic variable (in seven three-way interactions, e.g. the IPV*microfinance program membership*age-group was analysed with loglinear analyses using backward elimination of highest order interaction(s). In case of a significant three-way interaction, the association between IPV and microfinance membership was investigated by Chi-square test of proportions over the conditions of the demographic variable.

To examine whether the association between IPV and microfinance membership differed over different pairwise conditions within each of the demographic variables (21 four-way interactions, e.g. the IPV*microfinance program membership*age-group*residence) were tested using loglinear analysis. In case of a significant four-way interaction, one of the demographic variables

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was removed and a loglinear analysis with the remaining three-way interaction was made for each condition of the removed variable.

When investigating the higher order interactions the categories used for marital status were re-coded to living together (married or 'living together') or not (widowed, divorced, 'not living together'). The categories used for the household decision-making variables were re-coded to woman deciding (decision was made by respondent alone, jointly by respondent and her husband, or by respondent and other family members) and others deciding (decision was made by respondent's husband or by someone else in the family).

IBM SPSS Statistics Version 20 was used for all statistical analyses.

Ethical considerations

Ethical approval for the survey was obtained from the Institutional Review Board of Opinion Research Corporation (ORC), Macro International Incorporated. Informed consent was obtained from the participants before the start of the survey; the right to withdraw and guarantee of privacy was emphasized to the respondents throughout the survey. The field workers received specific training and support to deal with issues such as domestic violence. The standards on ethical and safety recommendations for research on domestic violence, which are set by the World Health Organization (WHO), were strictly adhered to. The WHO recommendations aim toward ensuring women's safety while maximizing disclosure of actual violence [24].

Results

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~~Among~~Out of 11,178 eligible women, 10,996 (98.4%) were interviewed; 4465 (41%) of ~~the~~these primary survey participants responded to the IPV-related questions (Fig. 1). ~~Respondents~~The respondents to ~~these~~the IPV-related questions were more frequently members of microfinance programmes (39%), compared with non-respondents (35%) (Table 1). It was also found that, among those who responded to the IPV questions, microfinance program membership was slightly more common among rural women and women from households with a male head compared with non-responders.

Insert Table 1 about here

Fifty-one percent (*n*=2275 of 4465) of the women who responded to the IPV questions had been victims of some form of domestic violence (Table 2). The specific exposures reported were 48% for moderate physical violence, 16% for severe physical violence, and 11% for sexual violence. ~~Forty-nine percent of the women had not been exposed to any IPV.~~ Having no formal education and belonging to the poorest group, according to the wealth index, were the ~~sociodemographic~~socio-demographic risk factors most strongly associated with exposure to IPV. Rural residents had a slightly increased proportional rate of exposure to physical and sexual violence, and Muslim women were more exposed to IPV than their non-Muslim peers.

Insert Table 2 about here

For women with secondary school or higher education, microfinance program membership was associated with a two- or three fold increase in exposure to IPV, respectively (Table 3).

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Similarly, women at the two wealthiest levels of the wealth index showed a twofold increase in exposure to IPV associated with program membership. The least educated and poorest groups showed no change in IPV exposure associated with microfinance ~~programs. Sexual violence did not show any statistically significant increase with microfinance activities~~program membership. For moderate physical violence the association between IPV and microfinance was different for women living with a man or not. Microfinance membership was only significantly associated with higher levels of IPV for women living together with a man at the time of the study (Cramer's V=.15, Odds Ratio (OR)=1.8 (95% Confidence Interval (CI95): 1.6-2.1)). For moderate as well as for severe physical violence, the association between IPV and microfinance membership was significantly associated with the wealth index. Microfinance membership was significantly associated with higher levels of IPV for the richer (Cramer's V=.20, OR=2.3 (CI95: 1.7-3.0)) and richest groups (Cramer's V=.15, OR=2.0 (CI95: 1.5-2.7)) when considering moderate physical violence and for the richer group (Cramer's V=.17, OR=2.5 (CI95: 1.8-3.6)) when considering severe physical violence.

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Insert Table 3 about here

~~The detailed analyses of interaction effects showed that only formally educated women, who were more equal with their spouses in their family relationships, experienced more IPV by membership in microfinance programs (Table 4). Women~~Spousal equity – represented by health-care decision making – and formal education showed a significant four-way interaction with IPV – represented by *moderate physical violence* – and microfinance membership indicating that the

association between IPV and microfinance membership is different over different combinations of spousal equity and formal education. Further examination showed that for women with formal education there was an interaction between spousal equity and the association between IPV and microfinance membership, while there was no such an interaction for women without formal education. For women with formal education who are participating in health-care decisions, there was a significant association between IPV and microfinance program membership (Cramer's V=.22, OR=2.5 CI95: 2.1-3.1). The same interactions were also found for decision-making about daily purchases (Cramer's V=.20, OR=2.3 CI95: 1.9-2.8). For severe physical violence, the patterns were similar for daily purchase but with smaller effect size (Cramer's V=.13, OR=2.2 CI95: 1.7-2.9).

Residence and religion showed a significant four-way interaction with IPV – represented by *severe physical violence* – and microfinance membership indicating that the association between IPV and microfinance membership is different over different combinations of residence and religion. Further examination showed that for Muslim women, residence showed no interaction with the association between IPV and microfinance membership, while there was such an interaction for non-Muslim women. While there was no increase in severe physical violence associated with microfinance program membership for non-Muslim women in rural areas, there was such an association for non-Muslim women in urban areas (Cramer's V=.20, OR=4.6 CI95: 1.2-17.8).

Sexual violence did not show any statistically significant association with microfinance activities.

More detailed analyses of associations between IPV and membership in microfinance programs for different representations of spousal equity and formal education indicated higher risks for women participating in decision making about management of their own health issues and who had a higher formal education than primary school (Table 4). These more empowered women were between two to three times more exposed to spousal violence ~~when~~if they also were members of microfinance programs. Among these women, those with the highest formal education were at more than four times higher risk of sexual violence when associated with microfinance than when not. No increase in IPV risk associated with membership in microfinance programs was observed for women who were not involved in decision making about management of their own health issues. In addition, using decision making on household purchases as a proxy for spousal equity, the women with formal education experienced increased spousal violence when they were also members of microfinance programs. No such increase in IPV risk associated with microfinance was observed for women who were not involved in decision making on household purchases.

Insert Table 4 about here

Discussion

Several previous epidemiological studies of IPV [13–15], including an early study from rural Bangladesh [9], have reported a protective effect of microfinance programs. Our results do not support the assertion that microfinance generally reduces IPV. The results from our study

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showed a pattern where microfinance was associated with increased exposure to IPV among women with a formal education. However, educated program members were less exposed to IPV if they were not involved in the family affairs, i.e. no increase in IPV was observed in households where the wife was associated with microfinance but excluded from the day-to-day decision making. Sexual violence was less clearly associated with different risk of IPV when being part of a microfinance program. This finding of different patterns between sexual and physical violence hypothesize ~~existing~~existence of differences in the causes of sexual and physical IPV, which is in accordance with several previous studies from Bangladesh [5, 25–30].

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There are several limitations that have to be taken into account when interpreting the current results. The study used a cross-sectional design, implying that the results only can be used to hypothesize about IPV causes. However, the observation that formally educated microfinance program members who participated in household decision making were more exposed to IPV suggests that either disagreements between spouses related to the management of household resources were linked to IPV, or that formally educated women who participate in household decision making are more able to free themselves from an established IPV pattern by participating in microfinance programs. The current study does not include dowry demands. Therefore, possible effects of dowry demands and/or microfinance plans on IPV are not explored here. Nonetheless, a recent study reports that dowry is uncommon among educated women in Bangladesh [31]. Other mechanisms linking microfinance with IPV are more likely to explain these association patterns. Even though the formally educated women were generally less exposed to IPV, ~~microfinanced~~microfinance loans may have caused more economic stress in this group due to larger business projects and multiple loans. It is possible that solidarity circles,

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which extend informal economic reciprocity beyond the family to the local community, were accepted as security for the microfinance loans among the poor. In contrast, formal security limited to the family may have been more common among the more wealthy and educated women. Such circumstances could explain why microfinance in the educated group reported more IPV exposure in interaction with non-financial empowerment, i.e. by shared household decision making [9]. Hence, there may have been fewer conflicts in households where the wife was not empowered mainly because husbands managed the loans in these households single-handedly. In addition, data on when the women joined the microfinance programs were not collected in the study. Thus, associations between the microfinance program membership phase and occurrence of IPV could not be examined. Thus, further research is needed on the mechanisms by which repayment of microfinance loans is associated with IPV among empowered women in developing countries [23].

Even though the initial survey response rate was 98%, the rate of response to the IPV-related questions was only 39%. However, we found only minor differences in relation to sociodemographic variables between responders and non-responders. Whilst the socio-demographic chosen variables were similar, there may be differences not investigated, such as greater severity or threat of violence, which prevented disclosure among non-responders. Moreover, response bias may have resulted from recall bias or deliberate unwillingness to disclose a history of domestic violence. Participants may have been reluctant to disclose their own victimization of IPV, given the sensitive nature of the questions and the strong social stigma. Under-reporting of events in association with the IPV-related questions may therefore have reduced the primary rates. Nonetheless, we do not expect that such under-reporting

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influenced the analyses of associations between IPV, microfinance program membership, spousal equity, and the woman's educational level. The analysis included numerous statistical tests but, with corrections for multiple comparisons, the family-wise error rate was maintained at a reasonable level. The effect sizes were low to moderate. The results are relevant at a group level, but another research design is needed to examine the factors that identify individual women at different risks for IPV.

In accordance with previous research [3, 5, 9], about every second woman in our study reported having been a victim of IPV. There is thus ample evidence that women in Bangladesh and other countries in the Indian subcontinent suffer from a heavy burden of IPV, and the identification of predisposing factors as well as countermeasures has recently been called for in this region [25]. We found that microfinance program membership was not associated with a decreased level of IPV in any population strata. Membership was associated with higher IPV exposure among women with a formal education. However, our findings should be interpreted in light of the limitations of the study ~~(~~, i.e. that a cross-sectional design was used and there was a considerable non-response to the IPV-related survey questions~~)~~. Other studies in different countries have indicated that association with microfinance reduces IPV exposure [13–15]. The findings in this study raise the question that association with microfinance are not always associated with reduced levels of IPV. Therefore additional prospective studies in different settings are warranted to study mechanisms by which economic stress might be a ~~a~~ contributing factor for IPV associated with microfinance, as well as on the effects resulting from interactions between economic and non-economic empowerment.

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The results of this study still have policy implications. Microfinance programs in Bangladesh make claims in their marketing campaigns about social responsibility. These organizations can therefore be expected to act with particular social conscientiousness. According to the results of this study, microfinance firms should be aware that program membership may increase IPV exposure among women belonging to risk groups. Alternatively, microfinance firms should ~~be aware~~inform applicants that microfinance program membership among formally educated women ~~might reflect an increased~~may increase the risk for exposure ~~of~~to IPV. However, before demands to provide information about risk for IPV can be put on microfinance firms, the identification of risk groups should be confirmed in prospective studies.

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Figure 1. Study participation displayed according to the STROBE statement.

Table 1. Membership in microfinance programs (%) among the survey participants (N = 10,996) divided by response and non-response to the IPV question and displayed by age, residence, education, religion, sex of household head, and household wealth index. The Chi-square ~~test~~tests are presented for differences in distribution of microfinance program membership between the respondents and the non-respondents to IPV questions.

	Respondents to IPV questions		Non-respondents to IPV questions		Total	
	n	Microfinance (%)	n	Microfinance (%)	n	Microfinance (%)
Age (years)						
15–19	462	29	886	23	1348	25
20–24	851	36	1323	31	2174	33
25–29	866	43	1069	37	1935	40
30–34	743	40	918	39	1661	39
35–39	701	41	895	41	1596	41
40–44	462	42	756	38	1218	39
45–49	380	36	684	35	1064	35
Residence						
Urban	1669	36	2482	33	4151	34
Rural*	2796	40*+	4049	36-	6845	37
Education†						
No education*	1495	45+	2030	40-	3525	42
Primary	1348	44	1920	40	3268	42
Secondary	1293	31	2052	29	3345	30
Higher	327	19	528	19	855	19
Religion						
Muslim*	4034	38*+	5890	34	9924	35
Non-Muslim	431	48	641	41	1072	44
Household head						
Female	505	25	803	27	1308	26
Male*	3960	40*+	5728	36-	9688	38
Marital Status						
Married*	4194	39+	5952	35-	10146	37
Widowed	149	38	317	29	466	32
Divorced	37	25	102	20	139	24
Not living together	85	25	160	28	245	27
Wealth index						
Poorest	804	47	971	41	1775	44
Poorer	857	45	1138	42	1995	43
Middle	849	43	1246	39	2095	41
Richer	856	41	1345	37	2201	39
Richest	1099	23	1831	22	2930	22
Total*	446 5	39*+	6531	35-	10 99 6	36

Significance for the chi-square test is denoted by * ($p < .05$, Bonferroni corrected for ~~2226~~ comparisons ~~in each column~~). Standardized residuals >2 are indicated by + and standardized residuals <–2 are indicated by –. † Based on N = 10,993 due to missing data.

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Table 2. Reported IPV in the final study population ($N = 4,465$) given as percentages and displayed by age, residence, education, religion, sex of household head, and household wealth index. Chi-square tests are presented for differences in distributions related to each of the variables: age, residence, education, religion, household head, marital status and wealth index.

	n	Moderate physical violence %	Severe physical violence %	Sexual violence %	Any violence %
Age (years)				$p < .001$, $V = .10$	
15–19	462	42	14	15+	46
20–24	851	47	14	15+	50
25–29	866	49	17	12	52
30–34	743	51	18	10	55
35–39	701	48	17	9	50
40–44	462	49	19	7–	50
45–49	380	49	17	5–	51
Residence				~~$p < .01$, $V = .04$~~	~~$p < .001$, $V = .05$~~
Urban	1669	46	16	9–	47–
Rural	2796	49	17	12	53
Education†		$p < .001$, $V = .22$	$p < .001$, $V = .17$		$p < .001$, $V = .21$
No education	1495	58+	23+	12	60+
Primary	1348	52+	18	12	55+
Secondary	1293	39–	10–	9	42–
Higher	327	20–	6–	8	24–
Religion		~~$p < .001$, $V = .06$~~	~~$p < .001$, $V = .05$~~	~~$p < .001$, $V = .06$~~	~~$p < .001$, $V = .07$~~
Muslim	4034	49	17	11	52
Non-Muslim	431	38–	10–	6–	40–
Household head					
Female	505	44	16	11	47
Male	3960	49	16	11	52
Marital Status			$P < .001$, $V = .11$		
Married	4194	48	16	10	51
Widowed	149	44	14	11	48
Divorced	37	62	43+	19	62
Not living together	85	66	38+	24	66
Wealth index		$p < .001$, $V = .18$	$p < .001$, $V = .14$	$p < .001$, $V = .11$	$p < .001$, $V = .19$
Poorest	804	58+	22+	16+	62+
Poorer	857	53+	19	13	57+
Middle	849	53+	18	11	56+
Richer	856	46	18	10	49
Richest	1099	34–	8–	6–	36–
Total	4465	48	16	11	51

Significant chi-square tests ($p < .05$, Bonferroni corrected for ~~67~~ tests per column) are reported by p values and effect size V (Cramer's V). Standardized residuals >2 are indicated by + and standardized residuals <–2 are indicated by –.
† Based on N = 4463 due to missing data.

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Table 3. Associations between IPV and membership in microfinance (MF) programs in different sociodemographic strata (n = 4,465). Significant chi-square tests for exposure to IPV and belonging to MF programs are reported by their effect sizes (Cramer's *V*). Odds ratios with 95% confidence intervals (OR; CI95) indicate increased risk for IPV for women belonging to MF programs compared with women who did not belong to such programs. Only significant tests ($p < .05$, Bonferroni corrected for ~~80~~104 tests) are reported as significant and standardized residuals >2 are indicated by + and standardized residuals <–2 are indicated by –.

		Moderate physical violence					Severe physical violence				
		No microfinance		Microfinance		*V* (OR; CI95)	No microfinance		Microfinance		*V* (OR; CI95)
	n	IPV	No IPV	IPV	No IPV		IPV	No IPV	IPV	No IPV	
Age (years)											
15–19	462	123	204	72	63		47	280	17	118	
20–24	*851*	*218-*	*327+*	*179+*	*127-*	*.18 (2.1; 1.6-2.8)*	*58-*	*487*	*62+*	*244*	*.13 (2.1; 1.4-3.2)*
25–29	866	216	279	205	166		73	422	75	296	
30–34	743	207	238	175	123		68	377	64	234	
35–39	*701*	*173*	*243*	*160+*	*125-*	*.14 (1.8; 1.3-2.4)*	55	361	62	223	
40–44	*462*	*114*	*156*	*114+*	*78-*	*.17 (2.0; 1.4-2.9)*	39	231	47	145	
45–49	380	114	129	74	63		37	206	27	110	
Residence											
Urban	*1669*	*418-*	*645+*	*345+*	*261-*	*.17 (2.0; 1.7-2.5)*	*138-*	*925*	*121+*	*485*	~~*.09 (1.7)*~~
Rural	*2796*	*747-*	*931+*	*634+*	*484-*	*.12 (1.6; 1.4-1.9)*	*239-*	*1439*	*233+*	*885*	~~*.09 (1.6)*~~
Education†											
No education	1495	463	363	402	267		181	645	166	503	
Primary	*1348*	*356-*	*400+*	*348+*	*244-*	*.12 (1.6; 1.3-2.0)*	115	641	126	466	
Secondary	*1293*	*302-*	*591+*	*207+*	*193-*	*.17 (2.1; 1.7-2.7)*	70	823	55	345	
Higher	327	44	220	22	41		11	253	7	56	
Religion											
Muslim	*4034*	*1093-*	*1425+*	*886+*	*630-*	*.15 (1.8; 1.6-2.1)*	*357-*	*2161*	*330+*	*1186-*	*.10 (1.7; 1.3-2.2)*
Non-Muslim	431	72	151	93	115		20	203	24	184	
Household head											
Female	505	154	227	66	58		53	328	28	96	
Male	3960	*1011-*	*1349+*	*913+*	*687-*	*.14 (1.8; 1.6-2.0)*	*324-*	*2036+*	*326+*	*1274-*	
Marital Status											
Married	*4194*	*1071*	*1490*	*930*	*704*	*.15 (1.8; 1.6-2.1)*	*330*	*2230*	*332*	*1302*	*.10 (1.7; 1.4-2.0)*
Widowed	149	40	54	26	30		11	82	10	46	
Divorced	37	14	10	9	4		10	14	6	7	
Not living together	85	42	22	14	7		26	38	6	15	
Wealth Index											
Poorest	804	249	177	219	159		96	330	84	294	
Poorer	857	234	240	221	162		84	390	77	306	
Middle	849	237	251	217	144		77	411	76	285	
Richer	*856*	*191-*	*311+*	*207+*	*147-*	*.20 (2.3; 1.7-3.0)*	*60-*	*442*	*90+*	*264*	*.17 (2.5; 1.8-3.6)*
Richest	*1099*	*254*	*597*	*115+*	*133-*	*.15 (2.0; 1.5-2.7)*	60	791	27	221	

	Sexual violence			Any violence		
	No	Microfinance	*V* (OR)	No	Microfinance	*V* (OR)

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	N	microfinance				microfinance				
		IPV	No IPV	IPV	No IPV	IPV	No IPV	IPV	No IPV	
Age										
15–19	462	52	275	15	120	139	188	75	60	
20–24	*851*	83	462	42	264	*245*	*300*	*184+*	*122-*	*.15 (1.8*
25–29	*866*	47	448	54	317	*231*	*264*	*221+*	*150-*	*.13 (; 1.74-2.5)*
30–34	743	42	403	34	264	223	222	182	116	
35–39	701	29	387	35	250	183	233	164	121	*.13 (1.7; 1.3-2.2)*
40–44	*462*	19	251	12	180	*117*	*153*	*116*	76-	
45–49	*380*	14	229	5	132	120	123	75	62	*.13 (1.7;1.3-2.3)*
										.17 (2.0; 1.4-2.9)
Residence										
Urban	*1669*	90	973	64	542	*436-*	*627+*	*355+*	*251-*	*.17 (2.0; 1.6-2.5)*
Rural	*2796*	196	1482	133	985	*822-*	*856+*	*662+*	*456-*	*.10 (1.5; 1.7-5.3)*
Education										
No education	1495	101	725	76	593	486	340	415	254	
Primary	1348	96	660	67	525	389	367	359	233	
Secondary	*1293*	74	819	43	357	*330-*	*563+*	*216+*	*184-*	*.16 (2.0; 1.6-2.5)*
Higher	*327*	15	249	11	52	*53*	*211*	*27+*	*36*	*.21 (3.0; 1.7-5.3)*
Religion										
Muslim	*4034*	276	2242	183	1333	*1183-*	*1335+*	*920+*	*596-*	*.13 (1.7; 1.5-2.0)*
Non-Muslim	431	10	213	14	194	75	148	97	111	
Household head										
Female	505	44	337	12	112	167	214	68	56	
Male	3960	242	2118	185	1415	*1269+*	*1091-*	*949+*	*651-*	*.13(1.3; 1.1-2.4)*
Marital Status										
Married	4194	255	2306	185	1449	*1157*	*1403*	*967*	*667*	*.14 (1.8; 1.6-2.0)*
Widowed	149	12	82	5	51	45	48	27	29	
Divorced	37	5	19	2	11	14	10	9	4	
Not living together	85	15	49	5	16	42	22	14	7	
Wealth Index										
Poorest	804	79	347	52	326	271	155	229	149	
Poorer	857	62	412	46	337	255	219	230	153	
Middle	849	48	440	44	317	254	234	224	137	
Richer	*856*	45	457	40	314	*203-*	*299+*	*214+*	*140-*	*.20 (2.3; 1.7-3.0)*
Richest	*1099*	52	799	15	233	*275*	*576*	*120+*	*128-*	*.14 (2.0; 1.5-2.6)*

† Based on N = 4,463 due to missing data.

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Table 4. Increase in IPV by membership in microfinance programs compared with non-membership displayed with regard to interaction with the woman's educational level and spousal equity (N=4 463, there were missing data for two participants on woman's education). Spousal equity is estimated by household decision-making policies regarding health issues and daily household purchases. The risk increase is given as the odds ratios (OR) with corresponding 95% confidence intervals.

			Increase in IPV associated with microfinance program membership			
			Moderate physical violence	Severe physical violence	Sexual violence	Any violence
Spousal equity	Woman's education	n	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]
Health decisions						
Woman	No schooling	957	1.20 [0.92 1.55]	1.06 [0.79 1.43]	0.88 [0.58 1.32]	1.16 [0.89 1.51]
	Primary	8 6 5	1.83 [1.39 2.40]	1.65 [1.17 2.33]	0.93 [0.61 1.40]	1.70 [1.29 2.24]
	Secondary	8 3 4	2.74 [2.03 3.69]	2.06 [1.31 3.24]	1.34 [0.83 2.14]	2.69 [2.00 3.63]
	Higher	2 5 5	3.20 [1.62 6.34]	2.00 [0.65 6.12]	4.55 [1.85 11.19]	3.95 [2.06 7.58]
Other	No schooling	5 3 8	1.14 [0.81 1.61]	1.42 [0.94 2.14]	1.00 [0.60 1.65]	1.10 [0.78 1.56]
	Primary	4 8 3	1.26 [0.88 1.81]	1.25 [0.77 2.03]	0.79 [0.45 1.39]	1.10 [0.76 1.57]
	Secondary	4 5 9	1.25 [0.83 1.89]	1.51 [0.77 2.97]	1.29 [0.62 2.68]	1.14 [0.76 1.71]
	Higher	7 2	1.47 [0.34 6.44]	15.25 [1.24 187.85]	0 [-]	1.05 [0.24 4.51]
Daily purchase decisions						
Women	No schooling	1 0 3 4	1.11 [0.86 1.42]	1.04 [0.78 1.39]	0.94 [0.62 1.41]	1.09 [0.85 1.40]
	Primary	8 8 2	1.92 [1.46 2.51]	1.79 [1.26 2.53]	0.89 [0.57 1.37]	1.70 [1.30 2.22]
	Secondary	8 4 0	2.16 [1.61 2.89]	2.06 [1.32 3.23]	1.34 [0.83 2.14]	2.08 [1.56 2.78]
	Higher	2 4	2.90 [1.44 5.86]	2.80 [0.76 10.32]	4.55 [1.61 12.81]	3.02 [1.54 5.91]

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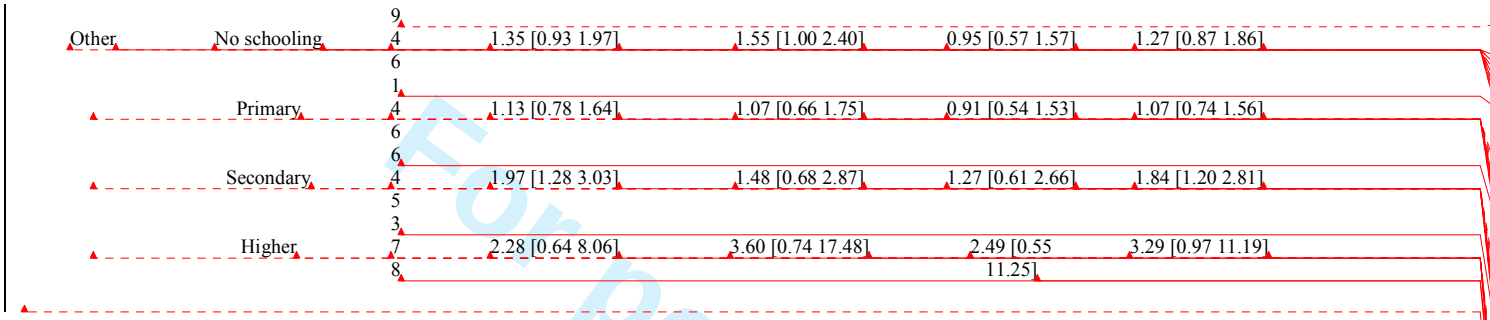

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Figure 1. Study participation displayed according to the STROBE statement.