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Retention of female volunteer community health workers in Dhaka urban slums: a case-control study

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Introduction Volunteer community health workers (CHWs) are one approach to addressing the health workforce shortage in developing countries. BRAC, a large NGO in Bangladesh, is a pioneer in using female volunteer CHWs as core workers in its successful health programmes. After 25 years of implementing the CHW model in rural areas, BRAC is now using CHWs in urban slums of Dhaka through *Manoshi*, a community-based maternal and child health project. However, high dropout rates among CHWs in the slums suggested a need to better understand factors associated with their retention, and consequently recommend strategies for increasing their retention.

Methods This mixed-method study included a case-control design to assess factors relating to the retention of volunteer CHWs, and focus group discussions (FGDs) to explore solutions to problems. In total, 542 current and 146 dropout CHWs participated in the survey. Six FGDs were held with groups of current and groups of dropout CHWs.

Results Financial incentives were the main factor linked to CHW retention. CHWs who joined with the expectation of income were almost twice as likely to remain as CHWs. This finding was reinforced by the inverse association between wealth quintile of the CHWs and retention; the poorest CHWs were significantly more likely to stay in the programme than the richest. However, social prestige, community approval and household responsibilities were important non-financial factors associated with CHW retention. Restructuring and expansion of existing financial incentives to better compensate CHWs were recommended by CHWs to improve their retention.

Conclusions Factors found to be important in this study are similar to those from earlier studies in rural areas. While the data indicate that financial incentives are the most commonly discussed factor regarding CHW retention in urban slums, the results also suggest other avenues that could be strengthened to improve their retention.

Keywords Volunteer community health workers, retention, financial incentives, non-financial incentives, urban slum

KEY MESSAGES

- Financial incentives are the main factor linked to retention of community health workers (CHWs) in urban slums; the poorest CHWs were significantly more likely to stay in the programme than the richest.
- Social prestige, community approval and household responsibilities were important non-financial factors associated with CHW retention.
- Restructuring and expansion of existing financial incentives can strengthen the commitment and participation of volunteer CHWs, which can benefit programmes directly, as well as provide value to the health system.

Introduction

An adequate health workforce is key to achieving improved health outcomes (Travis *et al*. 2004). Estimates suggest a shortage of at least 4 million health workers worldwide (Chen *et al*. 2004; WHO 2006). Without action to address the human resource crisis in health, health systems will not be able to deliver the care required to meet the Millennium Development Goals by 2015 (Narasimhan *et al*. 2004). In Bangladesh, as in many other developing countries, the scarcity of human resources in health is a pressing issue. The provider to population ratio in Bangladesh is very low: 146 health care providers per 10 000 population (Bangladesh Health Watch, 2008); one doctor for every 4645 people; one nurse for every 7786 people; and one Family Welfare Assistant (family planning field worker) for every 5651 people (Mabud 2005).

In response to this situation, BRAC has engaged large numbers of female volunteer community health workers (CHWs) called *Shasthya Shebika*. Currently, about 80 000 female volunteer CHWs work throughout the country in both rural and urban areas. These CHWs are the core of BRAC's community-based health interventions, serving as the first point of contact between community members and BRAC health services.

The Oxford Advanced Learner's English Dictionary defines volunteer as a person who does a job without being paid and without being forced to do it. Alternatively, the United Nations Volunteers defines volunteering as: (1) not being undertaken primarily for financial gain, (2) undertaking of one's own free will, and (3) bringing benefits to a third party, as well as to the people who volunteer (Dingle *et al*. 2001). In fact, neither definition exactly matches BRAC's female volunteer CHWs who see their role as profit making because they receive modest financial incentives for their work (Khan *et al*. 1998). In particular, CHWs are able to make some money from providing health services and selling health-related commodities and drugs in their communities. They also receive an allowance for attending refresher training courses each month.

CHWs have been used by BRAC in rural areas since 1977 and were recently introduced into urban settings in a maternal, newborn and child health (MNCH) project called *Manoshi*. The *Manoshi* project is currently being implemented in all urban slums in Dhaka, where each CHW is responsible for overseeing an average of 200 households and visiting 8–10 of these per day. CHWs visit homes, disseminate MNCH messages, identify pregnancies, accompany mothers in labour to delivery centres, attend to mothers and newborns at the time of delivery, and provide essential newborn care. In addition, CHWs provide iron and folic acid to pregnant mothers; supply vitamin A to under-5 children; detect, treat and refer neonatal sepsis and birth asphyxia cases; detect and treat acute respiratory infection (ARI) and diarrhoea; and provide postnatal care to mothers.

Dropout of volunteer CHWs creates attrition which is defined as the decline in the eligible pool of CHWs. In this study, we consider this attrition as a loss of the trained cadre of community health workforce of BRAC. Globally, the reported attrition rates of CHWs are between 3.2% and 77%, and these high rates are associated generally with volunteer CHWs (Bhattacharyya *et al*. 2001). The reason for the wide variation has not been explored but is likely related to the range of programmes that have been assessed, which have different selection criteria, different incentives and different requirements. The success of volunteer-based programmes is often hampered because of high dropout rates (Kabwa *et al*. 1996). Volunteers who drop out create 'decreased stability of the program, increased training costs because of the continuous need for replacement, and they make the program difficult to manage' (Haines *et al*. 2007). In particular, dropout increases human and financial resource demands for recruitment and training (Bhattacharyya *et al*. 2001; Yiu *et al*. 2001).

Since the inception of the volunteer CHW model, BRAC has faced high dropout rates in both urban and rural areas, with estimates ranging from 20% to 32% depending on the location and the programme (Khan *et al*. 1998; personal communication, 2008). BRAC has conducted a number of studies in rural areas to identify incentives and disincentives, and thereby determine approaches to minimize dropout rates. These studies have highlighted that economic incentives, primarily supplementary income from the sale of medicines and other health-related products, are the prime incentives for becoming a CHW and that the perception that earnings are insufficient is a main reason for dropping out (Khan *et al*. 1998; Mahbub 2000; Ahmed 2008; Rahman and Tasneem 2008; Rahman *et al*. 2010). Other causes of drop out include time constraints and disapproval from husbands, family members and neighbours (Mahbub 2000; Shin 2007; Ahmed 2008), while social prestige associated with the work, including recognition from the community, has been shown to be an incentive to continue the role of CHW (Ahmed 2008; Rahman *et al*. 2010). A recent study in a newborn care project highlights additional factors that may affect retention, such as expectation of better jobs, support and encouragement from families, and support from supervisors (Rahman *et al*. 2010).

The majority of previous studies in Bangladesh have either been limited case studies or included only current CHWs; therefore, they do not provide a rigorous analysis regarding the extent to which different factors affect retention. However,

their findings mirror those from health volunteer studies in other settings. Qualitative studies in Vietnam and South Africa showed that both financial and non-financial incentives influenced health workers' job motivation and attrition (Kironde and Klaasen 2002; Dieleman *et al*. 2003; Willis-Shattuck *et al*. 2008). One positive example is a study from Cambodia that attributes low dropout rates among female volunteers in a community-based reproductive health project to supportive supervision and achievement of personal growth through training and practice (Suehiro and Altman 2003).

To date, the majority of CHW studies in Bangladesh have been conducted in rural areas. One assessment of urban CHWs was conducted, but focused on only one urban slum. However, it identified potential factors unique to urban settings like competition from other sources of employment (Shin 2007). Such preliminary evidence and programme reports raised concerns among BRAC staff about whether or not the factors affecting retention of CHWs differed in urban and rural areas. Obvious differences between urban and rural areas were of concern. For example, concern was raised that local labour markets in urban areas might provide alternative opportunities for women that are not available in rural areas and might, therefore, provide a new factor related to retention. Likewise, the potential for competition, a factor linked to dropout in rural areas, is greater in urban areas where a range of formal and non-formal providers offer services similar to those offered by BRAC. Other differences between urban and rural areas that had already been identified included the fact that rural CHWs treat more patients and sell more health commodities than CHWs in urban settings (Tasneem 2006). Such differences may affect retention and therefore warrant further exploration, particularly if the CHW approach is to be adopted more widely in urban health programmes.

The present study focuses on the retention of CHWs in urban slums in Dhaka where BRAC has implemented the *Manoshi* project. In this study, 'retention' was defined as a state or condition in which a volunteer CHW was performing her assigned activities in the community prior to receiving the basic training and was available in the updated register book of BRAC branch offices as a current CHW irrespective of her performance level. Retention was not linked with a certain period of working as a volunteer CHW; simply, if a CHW had not dropped out from the programme and was available in the community for performing her assigned health activities, she was considered as being retained. The results are presented using a conceptual framework (Table 1) that was developed based on the existing literature but which was adapted based on the current findings. Existing available models (Bhattacharyya *et al*. 2001; Rahman *et al*. 2010) were considered to be incomplete if differences between rural and urban areas do exist.

Table 1 Conceptual model of factors affecting retention of volunteer community health workers (CHWs), Dhaka urban slums, 2008

Factors contribute to CHW retention	Incentives (+)	Disincentives (-)
Individual level		
Higher wealth score		(−)
Expectation of income	(+)	
Insufficient income/dissatisfaction with pay	…	…
Achievement of personal growth	…	…
Expectation of future employment	…	…
Family level		
Household responsibilities and attending children		(−)
Family disapproval and support & encouragement	…	…
Community level		
Expectation of social recognition	(+)	
Change in social prestige	(+)	
Social networks and cohesion	…	…
Community approval	(+)	
Organizational level		
Competition with other providers	(+)	
Competition from other sources of employment	…	…
Supportive supervision	…	…
Clear job description and career progression	…	…
Heavy workload	…	…
Dissatisfaction with management style	…	…

(+) affects retention as incentive.
(−) affects retention as disincentive.
…not measured in this model.

Methods

This mixed-method study included both a quantitative survey and qualitative focus group discussions (FGDs). In the quantitative component, a case-control design was used to assess factors related to retention of CHWs. Although case-control studies are most commonly used in epidemiological research, the method was well suited to the programmatic situation at the time that this study was designed. CHWs who had experienced the outcome (dropout) and those who had not (controls) could be readily identified using existing programme data. The programme sought rapid feedback as well as a more rigorous analysis than was possible using the cross-sectional and case study designs that had been used in earlier studies. Moreover, we preferred a case-control design over other epidemiological designs, such as retrospective cohort study, considering the scope of examining multiple risk factors associated with retention of volunteer CHWs. To complement the quantitative findings, FGDs were conducted to explore key findings from the case-control study in greater detail and identify recommendations for changes to the programme that might help to improve CHW retention.

Sample

Assuming an unmatched case-control design, Epi-Info was used to estimate the required sample size. To estimate sample size for a case-control study requires an estimate of the proportion of controls that are exposed to factors of interest. In this study, the only available data were reports from an assessment in one urban slum (Shin 2007). In that assessment, 15% of current CHWs reported difficulty in educating children and 15% reported fears and misconceptions of family members about the BRAC health programme, thus 15% was used as an estimate of exposure. In addition, the odds ratio (OR) of dropout associated with exposure was assumed to be 2 with 95% confidence level and 80% power. For a ratio of 1:4, the number of cases required was 133.

Eligibility criteria

Eligibility criteria were developed based on programme practices. A woman is considered by BRAC to be a CHW once she has completed a three-week basic training course. Once a CHW has completed the course, she is considered to be a current CHW if she is on the register of the branch office under which she works. Registers are reliable that are updated each month by the respective Branch Manager based on the availability of the CHWs both in the community and in the monthly-scheduled refresher training. CHWs are included on the register if they are available in the community to perform assigned health activities. However, the register does not reflect the level of activity (i.e. number of household visits per day, number of days of work). For this study, any CHW still on the register was considered a current CHW and included as a 'control'. Any CHW who was not on the register was considered to have dropped out and included as a 'case'. BRAC supplied lists of all current and dropout CHWs under the 12 *Manoshi* branch offices in Dhaka urban slums that had been in operation for 2 years at the time of the study. Selection bias is less likely because we selected based on programme records. Both cases (dropouts) and controls (current CHWs) were randomly selected from the list of CHWs in order to minimize selection bias. No CHWs refused to participate; however, we had to reschedule some interviews with CHWs based on their availability for interviews.

Protocol and measures

The final survey questionnaire was developed based on a tool used in a study of incentives for current CHWs in a rural BRAC MNCH site (Rahman and Tasneem 2008), and adapted using information gained from formative in-depth interviews with 15 CHWs and a range of *Manoshi* project staff. The final questionnaire included questions on socio-demographic characteristics and incentives and disincentives received or experienced.

Based on the literature from rural areas and discussion with programme staff, primary factors of interest were identified and classified according to level: *individual*, *family*, *community* or *organizational*. They included socio-economic status of CHW; financial incentives; social recognition; changes in social prestige; family approval; household responsibilities; community approval; competition from alternative employment; and competition with other providers and other CHWs. These variables were operationalized following the approach taken in past studies, and where no measures existed, for example for competition from other providers, quantitative approaches for capturing the constructs were developed for the study.

More specifically, at the *individual level*, socio-economic status was measured through wealth quintile and financial incentives were measured through CHWs' expectation of income. While level of CHW income may be related to retention in the programme, data on CHW income were not collected from dropout CHWs because recall bias is likely to be a differential for current and dropout CHWs. We could not capture the role of insufficient income or dissatisfaction with pay. Achievement of personal growth through training and professional development, and expectation of future employment were also not measured in this current model. At the *family level*, this current model measured impact of household responsibilities and family disapproval and family support. At the *community level*, we measured CHWs' expectation of social recognition, changes in social prestige and community approval. Finally, at the *organizational level*, we measured competition of CHWs with other providers in the community, competition from other sources of employment, and supportive supervision; but could not capture clear job description and career progression, heavy workload and dissatisfaction with management style.

Community approval was assessed by asking how the community treated the CHW role. Reasons for joining as a CHW were measured by a single item: 'Why did you start working as a CHW in the *Manoshi* project?'. Social prestige was determined using a composite measure constructed through a factor analysis of whether the CHW received social invitations, positive greetings in the street, informal credit, or invitations to resolve disputes. The data were collected by four Field Research Assistants, women who attended a five-day training on the procedures and questionnaire. The training was followed by a pre-test of the questionnaire in three *Manoshi* project areas.

Three FGDs with current CHWs and three with dropout CHWs were conducted after completing the survey and the preliminary data analysis. Each FGD comprised 6–8 participants who were selected purposively based on their socio-demographic characteristics and performance level as CHWs. FGDs took place in locations other than BRAC branch offices to encourage spontaneous and unbiased discussion. A Senior Field Research Officer led the discussion following a structured FGD guideline and each FGD lasted for an hour.

The study was conducted during June–December 2008. The study was approved by the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) Institutional Review Board.

Data analysis

Analysis was carried out using SPSS 11.5 and STATA 9.0. Factor analyses were used to construct wealth quintiles (Filmer and Pritchett 1999) and a composite measure of social prestige that was developed using the study data. Descriptive and univariate analyses were used to identify socio-economic and demographic differences between current and dropout CHWs. Variables found to be significant ($P \leq 0.15$) in the univariate analysis were entered into the multiple logistic regression models with stepwise selection in order to identify the independent risk factors associated with being a current CHW. The outcome modelled in the logistic regression was retention, with all current CHW considered to be retained, because this is of greater interest programmatically. A model that best explains the association between retention and independent variables was identified after controlling for confounders. Both content and thematic analyses were conducted using the transcripts of all FGDs.

Table 2 Socio-demographic characteristics of dropout and current community health workers (CHWs), Dhaka urban slums, 2008

Characteristics	Dropout CHWs (%) ($n = 146$)	Current CHWs (%) ($n = 542$)	*P*-value
Age (mean years)	30.8	32.3	n.s.
Marital status			<0.001
Single	13 (8.9)	11 (2.0)	
Married	124 (84.9)	467 (86.2)	
Separated, divorced or widowed	9 (6.2)	64 (11.9)	
Education			0.04
No education	47 (32.2)	189 (34.9)	
Primary incomplete	23 (15.8)	128 (23.6)	
Primary complete or higher	76 (52.0)	225 (41.5)	
Wealth quintile			0.01
Poorest	16 (11.0)	116 (21.4)	
Lower middle	26 (17.8)	104 (19.2)	
Middle	30 (20.5)	120 (22.1)	
Upper middle	25 (17.1)	82 (15.1)	
Richest	49 (33.6)	120 (22.1)	
Joined as CHW to earn income	72 (49.3)	328 (60.5)	0.01
Joined as CHW to increase social recognition	21 (14.4)	150 (27.7)	0.001
Change in social prestige			<0.001
Less than before	76 (52.1)	141 (26.0)	
No change	36 (24.7)	203 (37.5)	
More than before	34 (23.3)	198 (36.5)	
Duration of stay in slum (mean years)	16.2	16.4	n.s.
Monthly family income (mean US$)	135.5	133.8	n.s.

n.s. = not significant.
1 US$ = 67.52 taka (1 July 2008).

Results

In the case-control analysis 146 cases and 542 controls were identified and all of them agreed to participate. However, 68% of dropout CHWs could not be interviewed because they had moved out of the slums. Mean age of the dropout CHWs was 30.8 years, while for current CHWs it was 32.3 years. Average duration of stay in the slums was just over 16 years for both groups. Average monthly family income for both the groups was close to US$134. Average duration of employment for current CHWs was 14 months whereas it was 6 months for dropout CHWs. However, dropout CHWs and current CHWs differed in marital status ($P < 0.001$), educational level ($P = 0.04$), wealth quintile ($P = 0.01$), expectation of income ($P = 0.01$), expectation of social recognition ($P = 0.001$) and change in social prestige ($P < 0.001$) (Table 2). In the adjusted model, factors significantly associated with CHW retention were, at the *individual level*, socio-economic status as measured through wealth quintiles, and reason for becoming a volunteer CHW based on expectation of income; at the *family level*, household responsibilities; at the *community level*, expectation of social recognition, changes in social prestige, and community approval; and finally, at the *organizational level*, competition with other health service providers (Table 3). Although equal number of FGDs with both current and dropout CHWs were conducted, most important and relevant findings came from current CHWs. In the FGD sessions, current CHWs participated more actively, which did not happen among dropouts because of less personal interest and more recall problems. However, both the groups put emphasis on financial incentives and expressed less concern over non-financial incentives.

In general, the odds of remaining a CHW decreased with increasing wealth; the odds of retention were 2.7 times higher for the poorest CHWs compared to the richest CHWs. Furthermore, CHWs who joined with an expectation of income were almost twice as likely to remain as CHWs (adjusted OR = 1.87, 95% CI = 1.22–2.85). This expectation of income was given voice in the FGDs as exemplified by one current CHW: *''I am poor. My husband cannot pay for all the family's expenditure alone—rent, food, clothes, children's education . . . so, I have joined as a CHW with an expectation of income . . . salary as a means of regular income is preferable to anything else for continuing our CHW work.''*

The issue of expected income was measured as a Yes/No variable in the quantitative survey but the FGD provided a more

Table 3 Multiple logistic regression of independent factors associated with retention of community health workers (CHWs), Dhaka urban slums, 2008

Risk factor	Adjusted OR	95% CI	*P-value*
Age	1.00	0.98–1.02	0.87
Wealth quintile			0.04
Poorest	2.65	1.36–5.18	0.004
Lower middle	1.71	0.94–3.10	0.08
Middle	1.82	1.03–3.22	0.04
Upper middle	1.62	0.88–2.99	0.12
Richest	1.00	ref.	ref.
Joined as CHW to earn income	1.87	1.22–2.85	0.004
Did not face problems due to household responsibilities	2.20	1.18–4.09	0.01
Joined as CHW to increase social recognition	2.21	1.28–3.84	0.005
Change in social prestige			<0.001
Less than before	1.00	ref.	ref.
No change	2.62	1.61–4.26	<0.001
More than before	3.34	2.01–5.56	<0.001
Received community approval for CHW role	2.57	1.52–4.34	<0.001
Faced competition with other providers	1.02	1.00–1.04	0.03
Supervisor's feedback on CHW activities	2.54	0.90–7.12	0.08

OR = odds ratio.
CI = confidence interval.
ref. = reference group.

nuanced view. CHWs expressed frustration about not getting expected income, despite ongoing interaction with pregnant women, because of the way the programme is structured. CHWs are paid for pregnancy identification, bringing mothers to birthing huts, being present during deliveries and for newborn care. On average, among the pregnancies a CHW identified, 45% of the last five deliveries took place away from the birthing huts and CHWs are not paid for such births. As one current CHW mentioned: *''I identified and took care of a pregnant mother for 9 months, but before the delivery she left the slum and went to her mother's house in a rural area. So I didn't receive any incentive for the delivery even though I invested a lot of time in that mother.''*

CHWs who did not face problems due to their household responsibilities were more than twice as likely to remain as CHWs (adjusted OR = 2.2, 95% CI = 1.18–4.09). However, while a few of the CHWs in the FGDs reported that they had time conflicts in carrying out both household responsibilities and CHW duties, most of them said that they were able to manage both. This was illustrated by a dropout CHW: *''I used to work in the community in between my household chores. Once I finished cooking, getting my husband off to work and children to school, I started home visits and advising pregnant mothers. I managed my work whenever I had the time.''*

CHWs who enjoyed more social prestige after they became CHWs were more than three times as likely to remain compared to those who reported less social prestige after becoming CHWs (adjusted OR = 3.34, 95% CI = 2.01–5.56). The sense of increased social prestige was illustrated by a current CHW: *''Working as a CHW is good for me. Now many people know me. My social honor has been increased. I receive salam (greetings) more than before; people even share their internal family problems and seek suggestions sometimes.''* Despite their improved social status, many CHWs noted that they preferred money to social prestige because they have to buy everything to live in urban areas.

In addition, CHWs who received community approval or support were almost three times more likely to remain as CHWs compared to those who did not (adjusted OR = 2.57, 95% CI = 1.52–4.34). In the FGDs, most current and dropout CHWs also mentioned that they received continuous support and co-operation from the community. However, some of them mentioned that they struggled to continue their CHW work because of disapproval from family members or the community, as seen in the comment from one current CHW: *''Some people tease us about our work, Hey! You became a new doctor! Old doctors are dying without a meal. When we rush to an emergency call at 3am in the night these people ask us 'where are you going at midnight?' In their opinion, no decent women go out in the middle of the night.''*

In fact, most of the CHWs in the FGD said that they were not aware of their 'volunteer' role. As one dropout CHW disclosed: *''We were not clearly told about our role as a volunteer. The Program Organizer of BRAC told us about a monthly income of 300–400 taka (US$4.44–5.92). She also told us that if we joined as a CHW, BRAC might give us a salary in future.''*

As expected, most CHWs reported that they faced competition from pharmacy shops, village doctors and other traditional birth attendants (TBAs); over 75% of all CHWs faced competition from more than 10 providers. Those who stayed as CHWs reported more providers with whom they were in competition than those who dropped out (Table 4), but overall, those who reported competition were no more likely to remain as CHWs. A current CHW shared the way in which such competition

Table 4 Distribution of community health workers (CHWs) by reported number of health providers with whom they compete, Dhaka urban slums, 2008

No. of providers reported as competition	Current CHWs (%)	Dropout CHWs (%)	Total (%)
0–10	125 (23.1)	45 (30.8)	170 (24.7)
11–20	201 (37.1)	58 (39.7)	259 (37.6)
21–30	133 (24.5)	27 (18.5)	160 (23.3)
31–40	55 (10.1)	11 (7.5)	66 (9.6)
41+	28 (5.2)	5 (3.4)	33 (4.8)
Total	542 (100)	146 (100)	688 (100)

plays out: *''Some TBAs prevent us from entering into particular houses in their areas where they claim they have patients (pregnant mothers). They warn us not to treat them. They also continuously discourage those pregnant mothers from taking treatment and advice from BRAC CHWs.''*

During the FGDs, the most common suggestion was an increase in the existing financial incentives, such as an increased allowance for attending refresher training, an incentive package for pregnancy identification, and the supply of drugs and commodities at lower cost. However, alternatives like the supply of saris or shoes and treatment for their family members when sick were also suggested, as were bonuses or tips before major festivals. Incentives related to social prestige were less commonly mentioned, although a few CHWs suggested networking them with key social institutions to increase their standing in the community. An additional suggestion was the provision of identity (ID) cards to make them more recognizable to the community.

Discussion

It is evident from the results of the study that financial incentives were the most commonly discussed factor associated with CHW retention. In all six FGDs with both the current and dropout CHWs, almost all the participants raised the issue of financial incentives most often, this clearly superseding their concerns over other issues, such as household responsibilities, social prestige, community approval and competition with other providers. Importance of financial incentives was reinforced by the inverse association between wealth quintile and retention; the poorest CHWs were significantly more likely to stay in the programme than those in the richest quintile. The importance of financial incentives for continuing as a CHW confirms earlier findings from studies on CHWs carried out by BRAC researchers, in which economic incentives were found to be the prime incentive for becoming a CHW, as well as the main reason for dropping out (Khan *et al*. 1998; Mahbub 2000; Ahmed 2008; Rahman and Tasneem 2008; Rahman *et al*. 2010). However, while the urban CHWs are drawn from economically disadvantaged slum dwellers, those who appear to benefit most are the poorest among them, those for whom the minimum income provided was important to addressing their daily needs.

Although CHWs serve in the *Manoshi* project as volunteers, they expected a 'fixed salary' as a means of regular income for their services to the community. The fact that CHWs are paid financial incentives for some services may have led to the expectation that it is a paid rather than a volunteer position. However, during the implementation of the project, CHWs found that their positions were not salaried. Later on, they understood the limitations of the project in providing a regular salary during its implementation and suggested instead increasing the current financial incentives for certain activities like pregnancy identification and attending refresher training. Such increases in financial incentives would minimize their frustrations for missing incentives related to delivery if the mother delivers at home or somewhere other than a birthing hut, as is now the case.

Despite a number of studies showing that expectation of future paid employment (Kironde and Bajunirwe 2003; Franco *et al*. 2004; Willis-Shattuck *et al*. 2008; Rahman *et al*. 2010) and insufficient income/dissatisfaction with pay (Khan *et al*. 1998; Ahmed 2008; Rahman *et al*. 2010) are related to CHW retention, there was no association found in this study. The reason might be in variations in methodology in capturing factors of retention and/or variations in context and location of CHW interventions.

Household responsibilities, particularly cooking for family members, rearing and educating children, and taking care of older and disabled family members are mainly the responsibility of women in Bangladeshi society. In this study, a significant effect of household responsibilities on CHW retention was identified. As in a past study (Khan *et al*. 1998), CHWs with no or fewer household responsibilities were more likely to remain with the programme, probably because they had more time to be involved in extra-household activities. More information is needed about the different household responsibilities of urban women and different models of support available to them in order to determine how best to incorporate this factor into programme decisions regarding who to recruit as a CHW. In addition, it will be important to look at how this plays out in terms of family disapproval or support, which was not captured in this study but which has been identified in past studies (Khan *et al*. 1998; Rahman *et al*. 2010).

Consistent with findings from both paid and volunteer health workers (Mahbub 2000; Nyanzi *et al*. 2007; Shin 2007; Ahmed 2008), community acceptance and recognition of a CHW's services was related to retention and is a non-financial incentive that may motivate CHWs to continue in a volunteer programme. In this study multiple items were combined to measure social prestige and most of the CHWs felt that, after they became CHWs, they were honoured more by the community, they received more greetings, and they were more often invited to solve social disputes including the internal conflicts

of other families. The importance of social prestige may tie into the fact that this role helps them to build social networks and increases social cohesion, additional factors that may be important to CHW retention (Nyanzi *et al*. 2007). However, while most of the CHWs experienced positive responses from the community, the qualitative findings highlighted that negative responses also occur. These factors negatively affected CHWs' motivation on attendance of maternal and neonatal emergencies during holidays and at night. Similar work-related challenges, such as making visits at night to attend deliveries, were also identified in a study by Rahman *et al*. (2010). Such negative reactions may be most common when a programme is new (Chowdhury *et al*. 1997) and thus may reduce over time in the *Manoshi* project, which had been operating for less than 2 years at the time of the study.

Competition from other sources of employment was not an important predictor of retention in this study. It may be that women who are interested in other forms of employment self-select out of CHW participation. If this is the case, while competition from other sources of employment may not be related to retention among those CHWs who are recruited, its effect on the pool of eligible women may lead to unexpected differences between rural and urban CHWs. For example, those women who are available to be CHWs in urban areas may be less qualified than those in rural areas where women have fewer options, and this may limit the abilities of CHWs to perform as expected or required. This issue also warrants further exploration because of its implications for the performance of CHWs.

Despite concerns that competition with other health service providers in the slums might negatively affect CHW retention, a weak association was actually found. In previous BRAC studies in rural sites, there was an indication that competition with other providers is a factor in CHW drop out. So, this study included competition as a potential factor in urban slum areas as well. Considering the density of the urban slum population and the different kinds of informal providers, we considered competition with other providers not merely as a dichotomous variable, but rather tried to measure it by their numbers. The underlying assumption is that marginalized slum dwellers enjoy less access to modern health care providers and, therefore, frequently used to buy health services and products from informal and traditional providers. And these informal and traditional providers such as TBAs tried to capture pregnant mothers in their respective areas. Although there was no collaboration with such informal providers in the design of the existing *Manoshi* project, this study found that those CHWs who faced competition in terms of more providers were more likely to be retained in the programme. The finding that current CHWs were slightly more likely to report competition as a factor should be interpreted with caution given that it is of borderline significance. This counter-intuitive finding may reflect a greater awareness on the part of current CHWs about competition with other providers; those CHWs who dropped out may simply not have acknowledged the competition they faced or may not have had adequate time to experience or understand it. Or it may suggest that some collaboration with other providers encourages CHWs. Overall, this study points to a need to better understand the way in which competition operates within the urban environment, and to the need for better measures of competition.

However, other organizational level factors like supportive supervision (Suehiro and Altman 2003; Mathauer and Imhoff 2006; Haines *et al*. 2007; Henderson and Tulloch 2008; Rahman *et al*. 2010), clear job description (Mathauer and Imhoff 2006; Haines *et al*. 2007; Henderson and Tulloch 2008), heavy workload and dissatisfaction with management style (Rahman *et al*. 2010) were affecting retention of CHWs. The current model did not assess these factors, which was a limitation of this study, but they require further exploration through appropriate methods.

The existing concept of BRAC health volunteers needs to be better understood among the field-level staff of BRAC and clearly communicated with the volunteer CHWs. This has been observed as a serious gap in communication between BRAC field staff and the volunteer CHWs. This communication gap led to the false expectation among some volunteer CHWs in Dhaka's urban slums that their role as a CHW was a paid job rather than a voluntary role. This false expectation was a contributing factor to the high dropout of BRAC volunteer CHWs, and also worked as a limitation to this study. For effective operationalization of BRAC health volunteers in community-based health projects such as *Manoshi*, the concept of volunteers being used by BRAC needs to be institutionalized in line with the standard volunteer definition.

In terms of differences between CHWs in urban and rural areas, perceived access to skills and knowledge, which are important to retention in rural areas, are not a driving factor among urban CHWs. This difference may be due to better access to and learning from multiple sources in urban areas, and the lack of flexible time for gaining less priority skills and knowledge in a fast paced urban life. Some direct programme factors that were identified in rural areas, including lack of income from selling medicine and commodities and CHW workload, were not looked at for the urban CHWs. At the community level, there appears to be less resistance to the CHW role in urban areas, with few CHWs noting disapproval from family or community members, unlike their rural counterparts. Together, these differences suggest that expectations on the part of both individuals and communities differ in urban areas and do influence the work of a CHW.

Because this was a case-control study, the results are only suggestive of the relationship between CHW retention and the factors explored, although the use of this design increases the robustness of these findings relative to previous cross-sectional studies. The large proportion of dropout CHWs that could not be interviewed because they had moved out of the slums worked as a limiting factor for this study. In addition, the programme definition of CHW evolved over time and some former dropout CHWs rejoined during the data collection period because of an improved incentives package. Furthermore, some CHWs considered as current CHWs may not have been truly participating in providing services in the community, thus making them more like dropouts. The lack of precise boundaries between cases and controls increases the likelihood of non-differential misclassification and may have minimized differences between the groups, suggesting that our findings reflect the maximum variation between the groups.

In terms of the measures used, the assessment of wealth used only dichotomous responses regarding ownership of household goods (as is commonly done), and this does not allow for differences that may be better expressed by understanding multiple ownership of the same item, such as more than one television. Furthermore, because the wealth quintiles were calculated based on the CHW data and not based on the larger community, they may create artificial divisions between groups that are actually quite similar. In addition, data on CHW income were not collected from dropout CHWs because recall bias is likely to be a differential for current and dropout CHWs, and thus the role of financial incentives could not be fully assessed.

Arising from this analysis are a number of recommendations about how to ensure CHW retention. First, more consideration is needed on how to address CHWs' expectation of income. This could be done by restructuring the existing financial incentives, expanding them to better compensate CHWs and improve their current retention. Locally relevant incentive systems combining both financial and non-financial incentives should be explored (Mathauer and Imhoff 2006; Haines *et al.* 2007). Second, frustrations on the part of CHWs could be minimized by making their income stream steadier and less dependent on the singular event of delivery. CHWs could be compensated for pregnancies rather than deliveries, with the caveat that they meet certain standards, such as a set number of interactions with pregnant women, which is dependent on the duration of pregnancy at enrollment. Finally, the programme should communicate clearly that the CHW role is voluntary and should develop guidelines in terms of the expected duration of participation for CHWs so that the programme and the CHWs have similar expectations.

Conclusions

This study sheds light on some distinct factors, such as expectation of income, social prestige and community approval, which are positively associated with the retention of BRAC health volunteers working in urban slums in Dhaka. While some factors that encourage CHWs to remain in the programme are common to both urban and rural areas, the urban environment poses new challenges and reduces some obstacles to this model of service delivery. The specific recommendations that came from the CHWs in this study may help to improve CHW retention both within the *Manoshi* project and in other programmes employing volunteers. However, given that the study was conducted in the capital city, which differs from other urban areas in Bangladesh in many ways (NIPORT 2009), the findings should be verified before they are generalized to other settings. At the same time, the fact that this study reiterates the importance of some factors already identified in rural areas underscores the need to address these issues to ensure the viability of this volunteer community health workforce. Some dropout is expected in any programme that employs volunteers, but addressing the needs of the volunteers, sometimes in quite simple ways, can strengthen their commitment and their participation, thereby supporting the programme as a whole. In the case of volunteer CHWs, this can benefit programmes directly, as well as providing value to the health system.

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Conflict of interest

None declared.

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