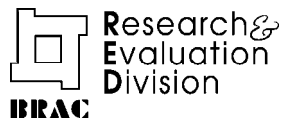


Improving the Quality of Life of the Presbyopic Patients: The Reading Glass Project of BRAC

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November 2009

Working Paper No. 8

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November 2009

Published by:

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Printing and Publication
Altamas Pasha

Layout and Cover Design
Md. Abdur Razzaque

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Printed by BRAC Printers at Tongi, Gazipur, Bangladesh

Acknowledgements

The authors are grateful to the respondents including presbyopic patients who shared their time and experience with us. The study was funded by MNCH Project and conducted by the Research and Evaluation Division (RED) of BRAC. RED is supported by BRAC's core fund and funds from donor agencies, organizations and governments worldwide. Current donors of BRAC and RED include Aga Khan Foundation Canada, AusAID, Australian High Commission, Brigham Young University, Bill and Melinda Gates Foundation, BRAC University, NIKE Foundation, Campaign for Popular Education, Canadian International Development Agency, Charities Aid Foundation-America, Columbia University (USA), Conrad N Hilton Foundation, Danish International Development Agency, DEKA Emergence Energy (USA), Department for International Development (DFID) of UK, Embassy of Denmark, Embassy of Japan, European Commission, Fidelis France, GITAC Consult GmbH, The Global Fund, GTZ-Germany, Government of Bangladesh, The Hospital for Sick Children, ICDDR,B Centre for Health and Population Research, ICLARM/World Fish Centre, Institute of Development Studies (Sussex, UK), Inter-cooperation Bangladesh, International Committee of the Red Cross, Japan International Cooperation Agency, International Research and Exchange Board, The Johanriter, Land O Lakes (USA), Manusher Jonno Foundation, Micro-Nutrient Initiative, NORAD, NOVIB, OXFAM America, Plan Bangladesh, The Population Council (USA), RNE/DGIS, Embassy of the Kingdom of the Netherlands, Royal Norwegian Embassy, Scojo Foundation Incorporation, SIDA, Sight Savers, Stanford Medical School, Swiss Development Cooperation, ULG Northumbria, UNICEF, United Way International, University of Calgary, University of Leeds, University of Manchester (UK), World Bank, World Food Programme, and World Health Organization.

Executive Summary

Presbyopia is considered as an emerging public health problem in Bangladesh as one-fifth of Bangladeshi people suffer from presbyopia. BRAC, an indigenous Bangladeshi NGO working to improve the health and livelihood of poor people, initiated a pilot project for improving the vision of presbyopic patients by offering a pair of reading glass at a minimum cost after testing for faulty near vision by the community health workers (*Shasthya Shebika* or SS). The programme was piloted for two years (2006-2007) and scaled up in 2008. This study aimed to explore the current state of awareness and knowledge among the community people about presbyopia and its treatment, barriers to detection of presbyopia and its correction by using reading glasses, satisfaction with services provided under the pilot project as well as perceived improvement in income-earning activities etc.

To address the above issues, a cross-sectional quantitative survey of the community people as well as presbyopic patients identified by BRAC SS was done. Samples were taken from the two sadar *upazilas* where the pilot is being experimented and also from Ayesha Abed Foundation.

Key findings

- The Reading Glass Project has succeeded in raising the awareness about near vision loss (presbyopia), but the level of knowledge regarding its relationship to age and its correction by a pair of reading glasses remains superficial. A gender divide (favouring men) and a regional divide (favouring respondents from Narsingdi) were observed.
- Majority of the people were unaware about the facilities available for presbyopia care including that provided by BRAC.
- Financial constraints, unavailability of skilled eye care providers, and social stigma were the main barriers in accessing presbyopia care by the community.

- The duration between onset of symptoms and first consultation with provider was quite long (median one year); in about 2/3rd of the cases first consultation was with the BRAC people.
- The skills of the SSs in detecting and measuring presbyopia was not of expected standard.
- The current users of reading glasses were almost unanimous in stating that there had been improvement in their daily household activities as well as work-related activities; they also had their income increased following the use of reading glass.
- Satisfaction with services provided by the Reading Glass project was quite high; main reasons mentioned include the fact that the process of detection was good, glasses were of low cost and good quality, diagnostic services were free, and that it improved their near vision.

Conclusion

The pilot programme has succeeded in raising the awareness about presbyopia in the study community, but the level of knowledge remains superficial. The community was not sufficiently aware about the presbyopia care facilities provided by BRAC, but those who accessed the services overcoming various barriers (e.g., informational and financial barriers) were highly satisfied. Majority of them had greater ease of performing daily activities as well as getting higher return from income-earning activities. However, the skills of the SSs in detecting and measuring presbyopia was not of expected standard. A divide was noted between the two study areas, with Narsingdi performing better than Manikganj in a number of indicators. Also, a gender divide disfavouring women with respect to knowledge and practice was observed.

Recommendations

In the light of the above findings and discussion, the following recommendations are made:

- The IEC campaigns should be strengthened to provide in-depth knowledge on presbyopia and its treatment, where this care is available, and the advantages of using reading glasses for daily household and economic activities. This will help the community to take informed decisions on availing presbyopia care.
- The skills of the SSs need to be improved through hand-on intensive training, frequent refreshers, and close supervision; alternatively, a different cadre such as the *Shasthya Karmis* (SK) or the Programme Organizers may be involved in implementing the programme.

- Efforts to overcome financial and other social barriers are needed for motivating potential clients of reading glasses; the happy and satisfied clients may be used as a role model to motivate peers.
- While scaling up, programme should be cautious of gender and regional bias; they should aim at an equitable, pro-poor expansion of the programme.

Introduction

Presbyopia (blurry up-close vision) is a vision disorder involving changes in accommodation of the eye and resulting difficulty in near vision (Hermans *et al.* 2007). The changes in accommodation may be related to changes in the eye muscles (ciliary muscles), lens, capsule of the lens, and/or changes in the vitreous, but are age related. It is a natural process of ageing. Very few studies were conducted to find out the prevalence of presbyopia and its social consequences worldwide. As such, the prevalence extrapolations for presbyopia are estimated based on applying the prevalence rates from few specific countries representing different regions of the world to the populations of other countries. According to this estimate, almost all persons older than 40 years have presbyopia globally (Holden *et al.* 2008). This study estimated that the less/least developed countries of Asia have a prevalence of around 43%, with average age of onset being about 40 years. In another review of studies, from low- and middle-income countries, Patel and West (2007) found that more than half of adults over the age of 30 have presbyopia. Presbyopia/blurry up-close vision can be easily corrected with similar pair of readymade reading glass.

Presbyopia is considered as an emerging public health problem in Bangladesh as one-fifth of Bangladeshi people suffer from presbyopia (Bourne *et al.* 2004a). Few studies have been done on loss of economical productivity after becoming a presbyopic patient and also, improvement of livelihood after correction of presbyopia (Patel *et al.* 2006, Sherwin *et al.* 2008, McDonnell *et al.* 2003). It is estimated that there are about 8.9 million presbyopic ($>+0.5$ D) patients in Bangladesh (extrapolated statistics) and around 70% of these would suitably be corrected by off-the-shelf (ready-made) spectacles (Bourne *et al.* 2004b). Also, given the burden of eye diseases and shortage of qualified health workers, a public health approach instead of a voluntary clinical approach for addressing refractive errors is suggested (Vincent *et al.* 2007).

BRAC, an indigenous Bangladeshi NGO working to improve the health and livelihood of the poor people, initiated a pilot project for improving the vision of presbyopic patients by offering a pair of reading glass at a minimum cost after testing for faulty near vision. The glasses are commonly used for reading and

works that require good near vision such as reading holy book, teaching, sewing, weaving, tailoring, shifting paddy, handicraft-making, fabric-making, cooking, and so on. Thus BRAC aimed to improve their quality of life (QoL) and enable them to continue as productive members of the society.

The pilot intervention

The pilot project was launched in February 2006 in Narsingdi and Manikganj sadar *upazilas* covering a population of 130,000 aged >35 years. The project began with financial and technical assistance from Scojo Foundation, USA (later re-named Vision Spring¹). BRAC trained community health volunteers (*Shasthya Shebika or SS*) regularly visited households in their catchment areas to screen out the presbyopic patients aged >35 years. A SS is supposed to screen four community members per day (80 per month) and sale 5 to 10 pairs of glasses per month. SAs collected the glasses from BRAC and sold those to the users at a mark-up price. A BRAC staff (Senior Health Coordinator) at the HQ supervises the entire distribution process to ensure that the reading glasses are sent to the SS in time and eventually reach the end users. In 2007, 58% (5,417/9,396) of presbyopic patients received BRAC services. Also, the SS generated community awareness through posters, handouts, health forums, village organization (VO) meetings about blurry-up close vision (presbyopia) and availability of ready-made reading glasses.

¹ 'Vision Spring and its partners reduce poverty and generate opportunity in the developing world by training local entrepreneurs to sell reading glasses'. Visit <http://www.visionspring.org> for more information.

Rationale

The pilot programme was in operation for two years (2006-07). Based on ‘success’ of the pilot experiment, BRAC decided to scale it up to a full-fledged programme in 2008. So far, no independent research has been conducted on the performance of the programme. Before expansion, it is imperative to understand the current state of knowledge/awareness and practices of the community people regarding presbyopia, skills of the SSs in detecting and measuring presbyopia, barriers to purchase and use of reading glasses, satisfaction with services, and improvement of their livelihood, etc. This study aimed to fulfill the knowledge gap, if any, and provide suggestions for improvement during the expansion phase.

Objectives

To study the current state of the programme with respect to knowledge on presbyopia and its community-based treatment and improvement in QoL following use of reading glasses.

More specifically, to study

A. In the community

1. Knowledge and practice of the community people (>35 years) regarding presbyopia, and barriers to its detection and using reading glasses
2. Knowledge about the Reading Glass project of BRAC including suggestions for improvement
3. Skills of *Shasthya Shebikas* or SSs in detecting and measuring presbyopia

B. Among the presbyopic patients (identified by BRAC SS)

1. Knowledge and practice (health-seeking behaviour) of the patients regarding presbyopia
2. Knowledge of the patients about the Reading Glass project of BRAC, satisfaction with services provided, and suggestions for improvement
3. Perceived changes in QoL of the current users of reading glasses

Materials and methods

This cross-sectional quantitative survey consisted of two components: i) survey of community people aged >35 years who are at risk of developing presbyopia, and ii) survey of patients identified as presbyopic by BRAC SSs during the pilot programme.

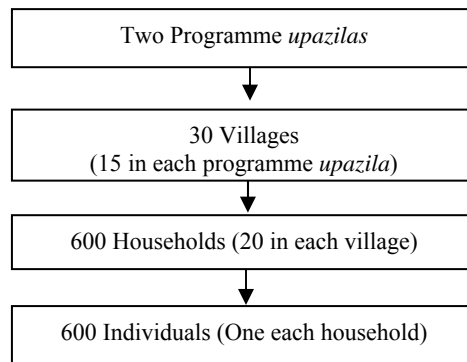
Study area

Two sadar *upazilas* of Narsingdi and Manikganj where the programme was piloted for two years were selected. Besides, a sample was also drawn from the workers of Ayesaha Abed Foundation (AAF) as an institutional entity.

Sampling

The community survey: A multi-stage 30-cluster sampling technique was used. All people aged >35 years who were at risk of developing presbyopia in the two programme *upazilas* (Narsingdi sadar and Manikganj sadar) constituted our sampling frame for the community survey. Initially, we listed all the villages in these two programme *upazilas*. From each programme *upazila*, 15 villages were taken at random (total 30 villages). In each village, 20 households were selected by systematic random sampling. The total sample was (15*20) or 300 households in each programme *upazila* (Fig. 1).

Figure 1. Sampling procedure for the community



One adult (male or female) was selected from each household. Thus, the total number of respondents were 600 from 600 households from two *upazilas*. Among them, 311 were female and 289 were male who consented to participate in the study.

Validation of capacity to detect near vision loss (presbyopia) by the SS

To validate the capacity of the trained SSs in detecting near vision loss, we took a random sub-sample of 42 individuals from each *upazila* who, during our survey, were reported by the households having difficulty in doing works which needed good near vision. These 84 individuals with difficult near vision were tested by the SSs and subsequently by trained technicians of the specialized eye hospitals for verification.

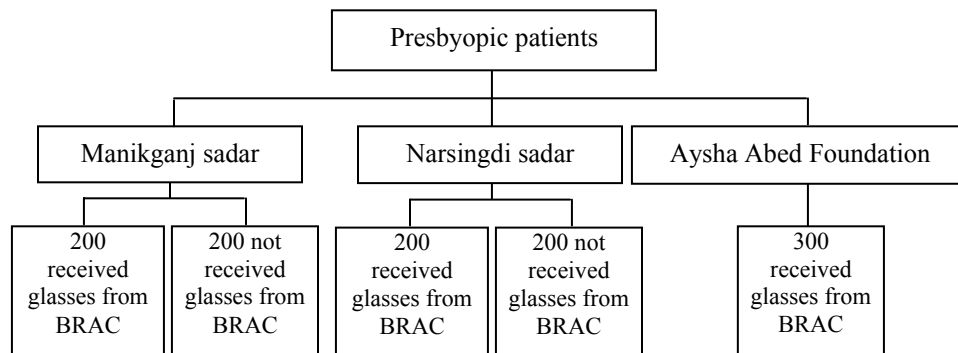
The presbyopic patients identified by BRAC SSs recorded in the patients register constituted our sampling frame. From each *upazila*, around 400 patients were taken ($p=0.5$, 5% significance level and precision 80%).

The Ayesha Abed Foundation (AAF) sample

The Reading Glass project was also implemented in the AAF during the pilot experiment. To fulfill programme need, we extended the study to include AAF as well to get an institutional perspective of the project. For the AAF sample, 300 BRAC SS identified presbyopic patients were included in the study. Sample size calculation was based on the total no. of identified patients which was around 2,000. The patients were selected randomly from a list of identified presbyopic patients’ register maintained at AAF (during 2007-2008).

Finally, these patients were distributed in the study areas as shown in Figure 2.

Figure 2. The sampling procedure for individual patients



Tools development

Pre-coded semi-structured questionnaire was developed to collect information. The questionnaires were pre-tested in a village outside the sample area. The final questionnaire was modified and updated on the basis of feedback received from field-testing.

We collected information on the following variables:

1. Demographic profile (age, sex, occupation, marital status, perceived economy at households, household income, person income, etc) and knowledge and practice-related information for the community people and presbyopic respondents;
2. Process of diagnosis (commencement of symptoms, nature of symptoms, sources of seeking care first, way of diagnosis by BRAC programme, delay in care seeking by sexes);
3. Satisfaction with services and suggestions for improvement;
4. Socio-cultural barriers in using spectacles by sex (reasons to use or not to use due to socio-cultural or other barriers);
5. Improvement in QoL due to use of Reading Glasses.

The survey

Skilled interviewers (social science graduates who have field experience of minimum two years) were recruited. A five-day intensive training was given that consisted of didactic lectures, mock interviews, role play and field practice at community level. A training manual was developed in Bangla to guide the interviewers in the field. Two teams were formed for data collection, each consisting of one supervisor and four interviewers. Before the actual survey, the teams were deployed in the study villages one day before the beginning of the survey for rapport building and for households listing. The villagers were informed about the purpose and activities of the survey and seek their cooperation. Households were visited on three repeated occasions at intervals if the first attempt was not successful. The field activities were supervised by the researchers. Data entry and cleaning was done at Dhaka under the supervision of the Principal Investigator (PI) and analyzed by SPSS version 11.5. Descriptive data are presented comparing the two study *upazilas*.

Results

Results are presented here in two sections: (i) Community survey including SSs' skills testing and (ii) Presbyopic patients' survey

Community survey

Table 1 shows socio-demographic characteristics of the respondents. Proportion of males was greater than females at age ≥ 55 years, especially in Narsingdi sadar *upazila*. Majority of them did not have formal schooling (41-61%) and females were lacking behind in this respect. While females were mostly engaged in domestic chores in both areas, the males in Mankganj were mostly engaged in farm activities (61%) compared to Narsingdi where they were mostly engaged in business (28%) activities, besides farm (21%) activities. Majority of the respondents' household income was below Tk 5,000 only (46-58%). While majority of the respondents (around 60%) self-rated their households as non-deficit.

Most of the respondents (>90%) were aware about the loss of near vision, but proportionately less were aware about its relation to age (49-77%), that it starts at around 35 years of age (49-82%), and that it can be treated by a pair of reading glasses (59-81%) (Table 2). The respondents from Narsingdi area were found to be more knowledgeable in all aspects ($p < 0.05$).

Respondents from Narsingdi appeared to be more knowledgeable than those from Manikganj; and males more than the females. Knowledge improved with age and level of schooling in general, with few exceptions.

Majority of the respondents in Manikganj (64%) were not knowledgeable about locally available facilities for the treatment of presbyopia, compared to only 18% in Narsingdi (Table 3). The knowledge about BRAC facilities was observed to decrease with increasing age (significantly so in Narsingdi) while the opposite was observed for the private eye hospitals and private doctors, and was directly related to the level of schooling.

Table 1. Socio-demographic characteristics of the community respondents by sex (%)

	Manikganj			Narsingdi		
	Male	Female	All	Male	Female	All
Age (years)						
35-44	23.0	42.0	33.0	23.0	43.0	33.0
45-54	27.0	34.0	31.0	36.0	34.0	35.0
55 & above	50.0	24.0	36.0	41.0	23.0	32.0
Formal schooling years						
None	53.0	68.0	61.0	29.0	52.0	41.0
1-5	27.0	20.0	23.0	47.0	40.0	43.0
>5	20.0	12.0	16.0	24.0	8.0	16.0
Marital status						
Currently married	93.0	72.	82.0	97.0	83.0	90.0
Divorced/separated/ widow	6.0	28.0	18.0	3.0	17.0	10.0
Occupation						
Agriculture	61.0	4.0	31.0	21.0	1.0	11.0
Self-employment	7.0	4.0	5.0	18.0	9.0	14.0
Business	12.0	2.0	7.0	28.0	1.0	15.0
Job	3.0	2.0	2.0	12.0	1.0	6.0
Domestic chores	1.0	83.0	45.0	1.0	79.0	40.0
Jobless	12.0	4.0	7.0	17.0	7.0	12.0
Others ¹	4.0	1.0	2.0	3.0	1.0	2.0
Monthly household income						
<5,000	53.0	60.0	58.0	40.0	51.0	46.0
5,001-10,000	38.0	32.0	35.0	44.0	40.0	42.0
>10,000	7.0	8.0	8.0	16.0	9.0	12.0
Self rated poverty status						
Always deficit	9.0	9.0	9.0	13.0	11.0	12.0
Sometimes deficit	33.0	32.0	32.0	27.0	28.0	27.0
Break even/no deficit	58.0	59.0	58.0	60.0	61.0	61.0
N	139	161	300	150	150	300

¹=caretaker, rickshaw puller, hawkers

Table 2. General awareness of respondents about near vision loss by study area, age, and years of schooling (%)

Study variables	Manikganj				Narsingdi				χ^2 Significance (a vs b)
	Male	Female	χ^2 Significance	All (a)	Male	Female	χ^2 Significance	All (b)	
Have heard about near vision loss	90.0	92.0	ns	91.0	98.0	95.0	ns	97.0	p<0.05
Knows about the age (>35 years) at which near vision loss starts	53.0	45.0	ns	49.0	85.0	79.0	ns	82.0	p<0.05
Knows that near vision loss is completely age related	52.0	46.0	ns	49.0	79.0	77.0	ns	77.0	p<0.05
Knows about glasses as an appropriate treatment for near vision loss	62.0	57.0	ns	59.0	83.0	79.0	ns	81.0	p<0.05
Perceive that using glasses is only solution	62.0	57.0	ns	59.0	73.0	71.0	ns	72.0	P<0.05
N	139	161		300	150	150		300	
	Age in years								
	35-44	45-54	>55	χ^2 Significance	35-44	45-54	>55	χ^2 Significance	
Have heard about near vision loss	90.0	89.0	94.0	ns	96.0	98.0	96.0	ns	
Knows about the age (>35 years) at which near vision loss starts	41.0	48.0	56.0	ns	77.0	88.0	81.0	ns	
Knows that near vision loss is completely age related	43.0	41.0	60.0	P<0.05	74.0	82.0	77.0	ns	
Knows about glasses as an appropriate treatment for near vision loss	64.0	60.0	55.0	ns	78.0	85.0	79.0	ns	
Perceive that using glasses is only solution	60.0	60.0	55.0	ns	67.0	78.0	71.0	ns	
N	99	92	109		98	105	97		

Continued

Table 2. Continued...

	Years of schooling							χ^2 Significance
	None	1-5	>5	χ^2 Significance	None	1-5	>5	
Have heard about near vision loss	87.0	96.0	98.0	p<0.05	97.0	96.0	98.0	ns
Knows about the age (> 35 years) at which near vision loss starts	39.0	60.0	71.0	p<0.05	76.0	84.0	92	p<0.05
Knows that near vision loss is completely age related	39.0	56.0	75.0	p<0.05	76.0	76.0	85.0	ns
Knows about glasses as an appropriate treatment for near vision loss	50.0	74.0	71.0	P<0.05	73.0	84.0	92.0	P<0.05
Perceive that using glasses is only solution	53.0	71.0	65.0	P<0.05	69.0	72.0	79.0	ns
N	182	70	48		122	130	48	

Table 3. Knowledge on available facilities for treating presbyopia by sex, age, and years of schooling (%)

	Manikganj				Narsingdi				χ^2 Significance (a vs b)
	Male	Female	χ^2 Significance	All (a)	Male	Female	χ^2 Significance	All (b)	
Knows about health facilities/health providers available locally for near vision loss									
BRAC	21.0	27.0	ns	24.0	44.0	47.0	Ns	45.0	p<0.05
Private doctor	14.0	12.0	ns	13.0	33.0	28.0	Ns	31.0	p<0.05
Lions Eye Hospital	-	-	-	-	36.0	40.0	Ns	38.0	-
Mamataz Eye Clinic	17.0	16.0	ns	16.0	-	-	-	-	-
Do not know	68.0	62.0	ns	64.0	19.0	17.0	Ns	18.0	p<0.05
N	139	161		300	150	150	Ns	300	
Age									
				χ^2 Significance				χ^2 Significance	
	35-44	45-54	>55		35-44	45-54	>55		
Knows about health facilities/health providers available locally for near vision loss									
BRAC	30.0	20.0	21.0	ns	52.0	49.0	35.0	p<0.05	
Private doctor	12.0	11.0	16.0	ns	24.0	33.0	31.0	ns	
Lions Eye Hospital	-	-	-	-	36.0	33.0	45.0	ns	
Mamataz Eye Clinic	18.0	9.0	20.0	ns	-	-	-	-	
Do not know	58.0	70.0	65.0	ns	15.0	14.0	24.0	ns	
N	99	92	109		98	105	97		
Years of schooling									
				χ^2 Significance				χ^2 Significance	
	None	1-5	>5		None	1-5	>5		
Knows about health facilities/ health providers available locally for near vision loss									
BRAC	25.0	16.0	33.0	ns	39.0	48.0	54.0	ns	
Private doctor	7.0	19.0	29.0	p<0.05	28.0	34.0	29.0	ns	
Lions Eye Hospital	-	-	-	-	39.0	38.0	35.0	ns	
Mamataz Eye Clinic	9.0	26.0	29.0	ns	-	-	-	-	
Do not know	68.0	63.0	54.0	ns	21.0	13.0	20.0	ns	
N	182	70	48		122	130	48		

NB. Multiple responses considered

Around 40 to 50% of the respondents were aware of project-related activities such as detection of presbyopia and offering reading glasses (spectacles) at low costs (Table 4).

Though the respondents' awareness about the activities of the project was found to increase with years of schooling, it decreased with advancing age. However, the differences were insignificant.

Table 4. Knowledge about BRAC's Reading Glass project by sex, age and years of schooling (%)

	Manikganj			Narsingdi				χ^2 Significance (a vs b)	
	Male	Female	χ^2 Significance	All (a)	Male	Female	χ^2 Significance		All (b)
Knows that BRAC identifies patients with near vision loss at household level	41.0	46.0	ns	44.0	49.0	53.0	ns	51.0	ns
Knows that BRAC offers low cost spectacles for near vision loss	31.0	39.0	ns	35.0	41.0	45.0	ns	43.0	ns
N	139	161		300	150	150		300	
	Age			χ^2 Significance	Age			χ^2 Significance	
	35-44	45-54	>55		35-44	45-54	>55		
Knows that BRAC identifies patients with near vision loss at household level	50.0	43.0	39.0	ns	57.0	52.0	43.0	ns	
Knows that BRAC offers low cost spectacles for near vision loss	37.0	37.0	31.0	ns	50.0	43.0	35.0	ns	
N	99	91	110		98	105	97		

Continued

Table 4. Continued...

	Years of schooling							
	None	1-5	>5	χ^2 Signi- ficance	None	1-5	>5	χ^2 Signi- ficance
Knows that BRAC identifies patients with near vision loss at household level	42.0	41.0	52.0	ns	46.0	52.0	63.0	ns
Knows that BRAC offers low cost spectacles for near vision loss	35.0	31.0	42.0	ns	37.0	45.0	52.0	ns
N	182	70	48		150	150	300	

When probed about how the information on project activities can be widely disseminated, the respondents mentioned interpersonal communication by the BRAC workers as the most suitable approach for this, especially respondents from Manikganj ($p < 0.05$) (Table 5).

Table 5. Suggestions by the respondents about how to disseminate information on BRAC's Reading Glass project by sex (%)

	Manikganj				Narsingdi				χ^2 Signi- ficance (a vs b)
	Male	Female	χ^2 Signi- ficance	All (a)	Male	Female	χ^2 Signi- ficance	All (b)	
Suggested ways to disseminate information on the project									
Interpersonal communication by BRAC	47.0	43.0	ns	44.0	30.0	32.0	ns	31.0	$p < 0.05$
Through mass media	29.0	28.0	ns	28.0	30.0	29.0	ns	30.0	ns
Involving community leaders	14.0	9.0	ns	11.0	13.0	9.0	ns	11.0	ns
Through Folk media	10.0	11.0	ns	10.0	10.0	12.0	ns	11.0	ns
Others	16.0	18.0	ns	17.0	19.0	18.0	ns	18.0	ns
N	96	99		195	87	82		169	

We asked the respondents about the barriers in identifying presbyopia, and using spectacles. Financial constraints (48-60%) and unavailability of skilled healthcare providers (22-33%) were the two most commonly mentioned barriers by the respondents in accessing presbyopia care (Table 6). Similarly, financial reasons were mentioned as the main barrier by the respondents in using spectacles by presbyopic patients.

Table 6. Perceived barriers in detecting presbyopia and using Reading Glasses by sex (%)

	Manikganj			Narsingdi		
	Male	Female	All	Male	Female	All
Barriers in detecting presbyopia						
Lack of accompany persons to take to facilities	3.0	2.0	3.0	7.0	4.0	5.0
Fear of jockeying	4.0	6.0	5.0	31.0	31.0	31.0
Lack of money to seek care	50.0	47.0	48.0	59.0	61.0	60.0
Unavailability of skilled doctors locally	36.0	30.0	33.0	25.0	18.0	22.0
Unavailability of diagnostic centres	13.0	8.0	10.0	5.0	5.0	5.0
No barriers	10.0	11.0	10.0	6.0	8.0	7.0
Barriers in using reading glasses						
Social stigma	7.0	11.0	9.0	32.0	32.0	32.0
Family stigma	1.0	4.0	3.0	16.0	17.0	16.0
No money to buy glasses	30.0	32.0	31.0	39.0	40.0	39.0
Do not know	68.0	59.0	63.0	45.0	44.0	44.0
N	139	161	300	150	150	300

NB. Multiple responses considered

There were more household members in Narsingdi than in Manikganj who complained of problems with near vision ($p < 0.05$) gender divide disfavoring women in Manikganj ($p < 0.05$) (Table 7). The proportion seeking treatment for presbyopia after detection by SS was more in Manikganj ($p < 0.05$). Of those who sought care, significantly more went to BRAC or private doctors in Narsingdi compared to Manikganj. Financial barrier was the main reason for not seeking care, especially in Manikganj ($p < 0.05$) (Table 7).

We also explored the capability of the SSs in detecting near vision and measuring the required power properly. Eighty-four (42 from each *upazila*) presbyopic patients identified by SSs were sent to formal specialized institutions such as the Mamataz Eye Hospital in Manikganj and Dhaka Progressive Lions Eye Hospital

in Narsingdi for cross-checking. The results are shown in Table 8. Of the patients identified by the SSs as presbyopic, around 60% were confirmed by the eye technicians working under direct supervision of the eye specialists of the eye hospitals. The capability of detection varied with grade of the SS inconsistently.

Table 7. Reported presbyopic patients in respondents' households and their treatment seeking behaviour by sex (%)

Study variables	Manikganj				Narsingdi				χ^2 Significance (a vs b)
	Male	Female	χ^2 Significance	All (a)	Male	Female	χ^2 Significance	All (b)	
Household members with problem of near vision as reported by respondent*	63.0	76.0	p<0.05	70.0	89.0	91.0	ns	90.0	p<0.05
N	139	161		300	150	150		300	
Suspected patients who were identified by the SS of having near vision loss	92.0	85.0	ns	88.0	92.0	90.0	ns	91.0	ns
Identified patients who sought treatment for near vision loss	29.0	32.0	ns	31.0	46.0	46.0	ns	46.0	p<0.05
Treatment seeking places									
BRAC	3.0	1.0	ns	2.0	12.0	15.0	ns	13.0	p<0.05
Private doctor	9.0	8.0	ns	9.0	12.0	6.0	ns	9.0	ns
Private clinic	6.0	4.0	ns	5.0	17.0	19.0	ns	18.0	p<0.05
Private shop	4.0	1.0	ns	2.0	4.0	2.0	ns	3.0	ns
Government	6.0	5.0	ns	5.0	7.0	4.0	ns	5.0	ns
Others	9.0	18.0	ns	15.0	10.0	12.0	ns	11.0	ns
N	87	123		210	134	137		271	
Reasons for not seeking care									
No money	70.0	59.0	ns	63.0	43.0	45.0	ns	44.0	p<0.05
Depends on natural recovery	8.0	8.0	ns	8.0	10.0	7.0	ns	8.0	ns
Laziness	14.0	26.0	ns	21.0	43.0	39.0	ns	41.0	p<0.05
Other **	16.0	12.0	ns	13.0	6.0	12.0	ns	8.0	p<0.05
N	61	84		144	72	73		145	

* based on the ability to perform certain activities requiring good near vision

** no person is available to accompany patient to facilities, lack of diagnostic facilities and skilled doctors, too weak to go to facilities, to go outside for treatment was unreligious etc

Table 8. Confirmation of presbyopia by skilled technicians of the Eye Hospitals* in patients initially identified as presbyopic by the Shasthya Shebikas (SSs)

	Manikganj					Narsingdi				
	Categories of SS (as per programme criteria)**									
	A	B	C	D	All	A	B	C	D	All
Skilled technicians of Eye hospitals confirmed presbyopia %	64.0	64.0	67.0	45.0	60.0	67.0	78.0	56.0	-	67.0
N	11	11	9	11	42	24	9	9		42

*Eye Hospitals: Mamataz (Manikganj) and Progressive Lion (Narsingdi) Eye Hospital

**Grading of SS performance:

Grade A: SS attends refresher training regularly and sells medicine of more than Tk 500 only per month

Grade B: SS attends refresher training regularly and sells medicine between Tk 301-500 only per month

Grade C: SS attends refresher training irregularly and sells medicine below Tk 300 only per month

Grade D: SS is very irregular in attending refresher training and also, selling medicines

Presbyopic patients' survey

Table 9 shows the socio-demographic characteristics of the patients. Majority of the identified (by the SSs of BRAC) presbyopic patients were aged between 45-54 years, the proportion being greater in Narsingdi (48%) compared to Manikganj (41%). In Manikganj, there were more patients who did not have formal schooling (46%) compared to those from Narsingdi (34%), with a gender divide disfavoring the females substantially. While the male presbyopic patients in Manikganj were mostly engaged in agriculture (32%) and small business (35%), those from Narsingdi were mostly engaged in self-employment (44%) and small business (24%). In both areas, women were engaged mainly in domestic chores, especially in Manikganj (69% as opposed to 42% in Narsingdi). The monthly household income was better in Narsingdi than in Manikganj, though almost equal proportion of respondents (10-11%) self-rated their poverty status as chronically deficit households. In both areas, around 48% of the identified patients bought reading glasses from BRAC, males being more than females (Table 9).

The majority of the patients were aware about presbyopia (>90%) before being identified especially in Narsingdi ($p < 0.05$), but proportionately less were aware about its relationship to age, and that it can be corrected by a pair of reading glasses (Table 10). An area and gender divide disfavoring Manikganj and women (in Manikganj) respectively was observed ($p < 0.05$).

Table 9. Socio-demographic characteristics of the presbyopic patients by sex (%)

	Manikganj			Narsingdi		
	Male	Female	All	Male	Female	All
Age (years)						
<35	0.6	2.5	1.7	0.0	0.9	0.5
35-44	23.0	40.0	33.0	18.0	40.0	31.0
45-54	49.0	36.0	41.0	50.0	46.0	48.0
55 & above	27.0	21.0	24.0	32.0	12.0	21.0
Years of schooling						
None	28.0	58.0	46.0	23.0	43.0	34.0
1-5	32.0	32.0	32.0	46.0	44.0	45.0
>5	40.0	10.0	22.0	31.0	14.0	21.0
Marital status						
Currently married	100.0	85.0	91.0	98.0	83.0	89.0
Divorced/separated/widow	0.0	15.0	9.0	2.0	17.0	11.0
Occupation						
Agriculture	32.0	2.5	15.0	12.0	4.0	7.0
Self-employment	8.0	21.0	16.0	44.0	44.0	44.0
Business	35.0	2.0	15.0	24.0	3.0	12.0
Job	9.0	1.0	5.0	13.0	4.0	8.0
Domestic chores	0.6	69.0	42.0	0.6	42.0	24.0
Jobless	6.0	3.0	4.0	2.0	1.0	1.0
Others ¹	8.0	1.0	4.0	5.0	2.0	3.0
Monthly household income						
<5,000	38.0	58.0	50.0	33.0	35.0	34.0
5,001-10,000	44.0	35.0	39.0	49.0	52.0	49.0
>10,000	18.0	7.0	11.0	18.0	13.0	15.0
Self rated poverty status of Household						
Always deficit	6.0	14.0	11.0	8.0	12.0	10.0
Sometimes deficit	23.0	27.0	25.0	31.0	36.0	34.0
Break even/no deficit	71.0	60.0	64.0	62.0	52.0	56.0
Purchased reading glasses from						
BRAC	60.0	42.0	49.0	55.0	43.0	48.0
From other sources	9.0	5.0	6.0	3.0	2.0	2.0
Never purchase	31.0	53.0	51.0	42.0	55.0	50.0
N	161	240	401	177	225	402

1 = caretaker, rickshaw puller, hawkers

Table 10. Knowledge of patients about presbyopia by sex (%)

	Manikganj				Narsingdi				χ^2 Signi- ficance (a vs b)
	Male	Female	χ^2 Signi- ficance	All (a)	Male	Female	χ^2 Signi- ficance	All (b)	
Have heard about near vision loss before	93.0	91.0	ns	92.0	99.0	97.0	ns	98.0	p<0.05
Knows that near vision loss is age related	64.0	47.0	p<0.05	54.0	87.0	87.0	ns	87.0	p<0.05
Knows about the age (>35 years) at which near vision loss commences	69.0	53.0	p<0.05	59.0	93.0	91.0	ns	92.0	p<0.05
Knows that reading glasses can correct/treat near vision loss	81.0	72.0	ns	76.0	86.0	81.0	ns	84.0	p<0.05
N	161	240		401	177	225		402	

Around 75% of the patients with near vision problem in both areas first consulted BRAC, females a little more than the males in Manikganj (Table 11). The median duration between onset of symptoms and first consultation in terms of days, was twice in Manikganj (two years) than that of Narsingdi (one year) (p<0.05). The majority of patients were identified by the SSs who used an eye-chart for testing vision, more so in Narsingdi (p<0.05). Around 48% of the identified patients purchased reading glasses from the SSs within 15 days, females in much lesser proportion than the males (p<0.05). A small proportion of the reading glass users (8%) experienced difficulties (twice in Narsingdi than that of Manikganj). In 33 to 52% of the instances, the SSs paid a follow-up visit respectively in Manikganj and Narsingdi (p<0.05). Currently, around 52% of the patients who bought reading glasses are using it to compensate near vision loss, the proportion being less among women than men (p<0.05) (Table 11).

Table 11. Health-seeking behaviour of presbyopic patients by sex (%)

	Manikganj				Narsingdi				χ^2 Signi- ficance (a vs b)
	Male	Female	χ^2 Signi- ficance	All (a)	Male	Female	χ^2 Signi- ficance	All (b)	
Sought help from BRAC at first consultation	69.0	78.0	p<0.05	75.0	71.0	77.0	ns	74.0	ns
The median duration (days) between onset of symptoms and first consultation	665	730	ns	715	365	365	ns	365	p<0.05
SS used eye-chart while testing for presbyopia	77.0	86.0	p<0.05	82.0	94.0	98.0	ns	96.0	p<0.05
Reading glasses (spectacles) purchased within 15 days following identification	60.0	34.0	p<0.05	47.0	56.0	44.0	p<0.05	49.0	ns
Faced any difficulties in vision after taking reading glasses	6.0	6.0	ns	6.0	12.0	10.0	ns	11.0	ns
Follow-up visit by SS after purchase of reading glasses	33.0	34.0	ns	33.0	49.0	54.0	ns	52.0	p<0.05
% of patients using reading glasses for near vision loss	68.0	44.0	p<0.05	53.0	59.0	44.0	p<0.05	51.0	ns
N	161	240		401	177	225		402	

Reasons given for not purchasing reading glasses include lack of money (more in Narsingdi and in case of females), facing not much problem without glasses (more so among males), and other reasons such as non-approval by husbands in the case of females, wanted to consult specialists, lack of confidence in the use of reading glasses, etc. (Table 12).

Table 12. Reasons for not purchasing glasses by presbyopic patients by sex (%)

	Manikganj			Narsingdi		
	Male	Female	All	Male	Female	All
Lack of money	33.0	41.0	39.0	46.0	64.0	57.0
Do not face much problem without reading glasses	30.0	23.0	25.0	35.0	12.0	21.0
SS did not supply reading glasses immediately	13.0	7.0	7.0	0.0	2.0	1.0
Social prejudice	0.0	7.0	5.0	5.0	8.0	7.0
Less trust on BRAC SS	10.0	5.0	7.0	0.0	2.0	1.0
Wrong power detection	5.0	3.0	4.0	---	---	---
Have distance problem	---	---	---	5.0	4.0	5.0
Others*	10.0	15.0	12.0	10.0	12.0	11.0
N	161	240	401	177	225	402

* Husband did not allow, spectacles further deteriorates the power, wanted to go to specialists, lack of trust in spectacles; multiple responses considered.

Table 13 indicates the awareness of and satisfaction with the services received by the presbyopic patients from BRAC. About 62% presbyopic patients in Manikganj and 77% in Narsingdi were aware about the price of reading glasses ($p<0.05$), which in majority of cases was perceived reasonable (61% and 77% respectively, $p<0.05$) and of good quality (around 70%). Around 80% of the patients were satisfied with the process of identification of presbyopia by the SSs. Women were disadvantaged in all aspects considered ($p<0.05$). However, less than half of the patients in both areas were satisfied with using the Glasses, the proportion of satisfied clients being much less among the females. The main reason for satisfaction was reported to be the fact that they now can see with ease. Suggestions for improvement included the involvement of a doctor (more in Narsingdi, $p<0.05$), free provision of reading glasses and modern instruments (more in Narsingdi, $p<0.05$), and raising the awareness of the community people, especially in Manikganj ($p<0.05$).

Table 13. Knowledge about BRAC Reading Glass project, satisfaction with services, and suggestions of improvement by sex (%)

	Manikganj				Narsingdi				χ^2 Signi- ficance (a vs b)
	Male	Female	χ^2 Signi- ficance	All a	Male	Female	χ^2 Signi- ficance	All b	
Aware about price of reading glasses (Tk 90-110) offered by BRAC	78.0	52.0	p<0.05	62.0	79.0	76.0	ns	77.0	p<0.05
Price is perceived to be reasonable by the respondents	76.0	50.0	p<0.05	61.0	83.0	73.0	p<0.05	77.0	p<0.05
BRAC offers good quality reading glasses	79.0	66.0	p<0.05	71.0	79.0	66.0	p<0.05	72.0	ns
Satisfied with the process of diagnosis	80.0	80.0	ns	80.0	80.0	77.0	ns	78.0	ns
Satisfied with using BRAC provided reading glasses	58.0	38.0	p<0.05	46.0	51.0	37.0	p<0.05	43.0	ns
N	161	240		401	177	225		402	
Main reasons of satisfaction with diagnosis*									
Way of diagnosis was adequate	47.0	41.0	ns	43.0	42.0	47.0	ns	45.0	ns
Could see properly	29.0	15.0	p<0.05	21.0	6.0	5.0	ns	5.0	p<0.05
Free of cost identification	22.0	40.0	p<0.05	33.0	33.0	33.0	ns	33.0	ns
Do not need to go outside	7.0	9.0	ns	8.0	29.0	23.0	ns	26.0	p<0.05
N	128	192		320	141	173		314	
Main reasons of satisfaction for using glass*									
Could see properly	70.0	77.0	ns	73.0	80.0	79.0	ns	80.0	ns
Low cost and good quality	32.0	19.0	p<0.05	26.0	27.0	29.0	ns	28.0	ns
N	93	91		184	90	83		173	

Continued

Table 13. Continued...

	Manikganj				Narsingdi				χ^2 Significance (a vs b)
	Male	Female	χ^2 Significance	All a	Male	Female	χ^2 Significance	All b	
Suggestion for further improvement*									
If doctors are involved	45.0	41.0	ns	43.0	62.0	56.0	ns	58.0	p<0.05
Awareness must be increased	48.0	49.0	ns	48.0	14.0	18.0	ns	16.0	p<0.05
If provides free spectacles	5.0	13.0	p<0.05	10.0	42.0	37.0	ns	39.0	p<0.05
Modern instruments are necessary	12.0	7.0	ns	9.0	47.0	38.0	ns	42.0	p<0.05
N	161	240		401	177	225		402	

* Multiple responses considered

The key features of patients from the Ayesha Abed Foundation are presented in Table 14. The level of knowledge was comparable to those of the patients from Manikganj. The median duration between onset of symptoms and first consultation was 365 days. The AAF patients received reading glasses late; however, 91% of them are currently using reading glasses which is much higher than the other groups of patients, and 83% of the patients were satisfied with the services.

We explored whether there was any improvement in the QoL including income following the use of reading glasses by the presbyopic patients (Tables 15 and 16). The majority of patients stated that there was some improvement in some daily activities such as cooking, separating fish bones while eating, reading and writing, etc. since they have started using reading glasses (Table15).

Table 14. Key features of patients from Ayesha Abed Foundation (AAF)

	%	No
Knowledge		
Knows that near vision loss is age-related	61.0	182
Knows the age (>35 yrs) at which near vision loss occurs	73.0	218
Knows that Reading Glass can correct loss	86.0	257
Duration between onset of symptoms and first consultation (median days)		365
Reading Glass received within 15 days of identification by SS	29.0	87
Follow up visit by SS	77.0	230
Currently using Reading Glasses	91.0	272
Satisfied with service provided	83.0	248
Faced social barriers while using Reading Glasses	14.0	42

Significant proportion of the patients stated that their working hours and income had also increased following the use of reading glasses (Table16). Great majority of them (>90%) stated that they could work with comfort by using reading glasses.

Table 15. Improvements in different activities as perceived by the presbyopic patients using reading glasses (%)

	Manikganj		Narsingdi		Ayesha Abed Foundation	
	Improved	Not improved	Improved	Not improved	Improved	Not Improved
Daily activities						
Cutting nail	79.0 (130)	21.0 (37)	96.0 (172)	4.0 (7)	82.0(208)	18.0 (44)
Threading needles	99.0 (127)	1.0 (2)	97.0 (145)	3.0 (5)	98.0 (271)	2.0 (6)
Embroidery	98.5 (66)	1.5 (1)	97.0 (91)	3.0 (3)	96.0 (223)	2.0 (4)
Cooking	82.0 (71)	18.0 (16)	95.0 (76)	5.0 (4)	70.0 (157)	30.0 (66)
Cutting small fish	95.0 (73)	15.0 (13)	96.0 (96)	4.0 (4)	79.0 (183)	21.0 (49)
Separating fish bone from rice	84.0 (139)	16.0 (26)	93.0 (143)	7.0 (10)	75.0 (188)	25.0 (61)
Other activities					96.0 (245)	4.0 (11)
Reading	98.0 (104)	2.0 (2)	96.0 (144)	4.0 (7)	96.0 (174)	4.0 (6)
Writing	95.0 (107)	5.0 (5)	98.0 (128)	2.0 (3)	93.0 (121)	7.0 (9)
Counting money	71.0 (107)	29.0 (43)	90.0 (119)	10.0 (14)	57.0 (110)	43.0 (84)

Table 16. Improvement in work and income as perceived by the presbyopic patients using reading glasses (%)

	Manikganj	Narsingdi	Ayesha Abed Foundation
Mean working hours			
Previous	6.3	6.8	7.5
Current	7.9	8.8	8.30
Significance (paired t test)	p<0.05	p<0.05	p<0.05
Absenteeism in work due to near vision problems			
Previous	49.0	71.0	38.0
Current	9.0	11.0	9.0
Income increased	73.0	81.0	70.0
Work comfortably with spectacles	97.0	95.0	91.0
N	157	172	296

Key findings

- The Reading Glass project has succeeded in raising the awareness about near vision loss (presbyopia), but the level of knowledge regarding its relationship to age and its correction by a pair of reading glasses remains superficial. A gender divide (favouring men) and a regional divide (favouring respondents from Narsingdi) were observed.
- Majority of the people were unaware about the facilities available for presbyopia care including that provided by BRAC.
- Financial constraints, unavailability of skilled eye care providers, and social stigma were the main barriers in accessing presbyopia care by the community.
- The duration between onset of symptoms and first consultation with provider was quite long (median one year); in about 2/3rd of the cases the first consultation was with the BRAC people.
- The skills of the SSs in detecting and measuring presbyopia was not of expected standard
- The current users of reading glasses were almost unanimous in stating that there had been improvement in their daily household activities as well as work-related activities; they also had their income increased following the use of reading glasses.
- Satisfaction with services provided by the Reading Glass project was quite high; main reasons mentioned included the fact that the process of detection was good, glasses were of low cost and good quality, diagnostic services were free, and that it improved their near vision.

Discussion and conclusion

Presbyopia or the progressive loss of near vision with age is a universal phenomenon and uncorrected refractive error is recognized by the WHO as one of the five important causes of preventable blindness worldwide (WHO 2009). It is estimated that there are about 1.27 million presbyopic patients in Bangladesh. However, there is lack of data in this regard. The findings in this study with respect to knowledge and practices regarding presbyopia is presented from two *upazilas* of Bangladesh where a pilot project was implemented by BRAC for two years. This study presents data comparing the two programme areas to have an idea about the current status and to suggest modifications, if necessary, before scaling up in new areas as a full-fledged programme.

The preponderance of females among identified presbyopic patients were also observed in other countries such as Tanzania (Burke *et al* 2006), India (Nirmalan *et al.* 2006), Australia (Attebo *et al.* 1997, Livingston *et al.* 1998) and Fiji (du Toit *et al.* 2006). Though awareness ('have heard the name of...') of presbyopia was high, the level of relevant knowledge on presbyopia was found to be poor. This is not surprising as knowledge on common eye diseases in general, and presbyopia in particular, was found to be poor in other studies as well (Dandona *et al.* 2001, Chew *et al.* 2004).

The majority of the people in the study areas were not sufficiently aware of the presbyopia care facilities provided by BRAC although the piloted programme for two years. Lack of awareness of services may hamper treatment-seeking (Palagyi *et al.* 2008). Programme needs to revisit its IEC campaign and revamp it so that the community is motivated (by converting 'unfelt need' to 'felt need' and reducing diagnosis delay) to seek informed services for difficulties in near vision. However, we should also be cautious of the fact that underutilization of available facilities may also occur due to number of social and economic barriers as observed elsewhere (du Toit *et al.* 2006, Palagyi *et al.* 2008), and also, personal preferences related to decision-making for buying spectacles (Fylan and Grunfeld 2005). It is encouraging to note that majority of those who accessed services

were satisfied. It is important for programme to maintain this level of satisfaction for sustainability.

Development of health human resources to perform good quality refraction remains a challenging task. According to WHO, there should be one refractionist for every 50,000 persons (WHO 1997). WHO now recommends a primary healthcare approach to address refractive errors. In line with this, BRAC trained the SSs who are the front line workers of BRAC Health Programme (Ahmed 2008) to test for near vision problems during their routine household visits. However, there is quite a large gap in their diagnostic skills when cross-checked against the specialized eye hospital technicians. As the findings showed, capacity of the SSs in detecting presbyopia in general, and the required corrective power in particular, should be a concern to the programme practitioners. Provision of standard training by specialist institution with regular refresher sessions and close supervision may improve their level of skill. Alternatively, programme may think of using higher level of community health workers such as the SSs, SKs or the Programme Organizers who have higher level of schooling, are salaried staff, and have better cognitive ability to earn the trust of the community to undertake this kind of tasks.

It is encouraging to note that the project has contributed substantially to improve the QoL of the presbyopic patients. Almost all of those who are currently using reading glasses said that it has not only eased their daily household activities, but also increased their productivity in income-earning activities. Majority of the presbyopic patients enjoyed improvement in QoL with correction of presbyopia (Patel *et al.* 2006), though a small proportion may require other types of intervention (Luo *et al.* 2008).

Limitations

Due to absence of baseline information, as well as inability to take a sample for comparison due to resource constraints, a full scale evaluation of the programme could not be done. However, the findings give a fair picture of the current situation and draws our attention to the issues which needs more efforts while scaling up the pilot project into a comprehensive programme.

Conclusion

The pilot programme has succeeded in raising the awareness about presbyopia in the study community, but the level of knowledge remains superficial. The community was not sufficiently aware about the presbyopia care facilities available, but those who accessed the services overcoming various barriers (e.g., informational and financial barriers) were highly satisfied. Majority of them had greater ease of performing daily activities as well as reaping higher return from

economic activities. However, the skills of the SSs in detecting and measuring presbyopia was not of expected standard. A divide was noted between the two study areas, with Narsingdi performing better than Manikganj in a number of indicators. Also, a gender divide disfavouring women with respect to knowledge and practice was observed.

Recommendations

In the light of the above findings and discussion, the following recommendations are made:

- The IEC campaigns should be strengthened to provide in-depth knowledge on presbyopia and its treatment, where this care is available, and the advantages of using reading glasses for daily household and economic activities. This will help the community to take informed decisions on availing presbyopia care.
- The skills of the *Shasthya Shebikas* need improvement through hand-on intensive training, frequent refreshers and close supervision; alternatively, a different cadre such as the *Shasthya Karmis* or the Programme Organizers may be involved in implementing the programme.
- Efforts to overcome financial and other social barriers are needed for motivating potential clients of reading glasses; the happy and satisfied clients may be used as a role model to motivate peers.
- While scaling up, programme should be cautious of gender and regional bias; they should aim at an equitable, pro-poor expansion of the programme.

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