



**Spectacles Compliance Study: Sunderbans
Eye Health Service Strengthening Project,
India**
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Study undertaken by

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Executive summary

Introduction

The Sunderbans Eye Health Service Strengthening Project was implemented over a five-year period by Sightsavers with funding from the Seeing is Believing (SiB) initiative. The project was designed to contribute towards the reduction of avoidable visual impairment in the Sunderbans area of West Bengal, India. A total of 17 Vision Centres have been established in the project area to provide refraction and spectacles at a subsidised rate. As part of the project, eye screening of school children was also conducted, and free spectacles were dispensed to the children diagnosed with refractive error.

Study aim

The study aimed to examine the compliance with spectacle wear among adults and children who had been dispensed spectacles 6-18 months preceding the study.

Methods

Design and sampling

The study used a mixed-methods design using quantitative and qualitative data collection techniques. To collect the quantitative data, a survey of patients who had received spectacles 6-18 months prior to the study was conducted using a structured questionnaire. Qualitative data was collected using in-depth face-to-face interviews.

The study adopted a single stage sampling approach. The lists of adult and child beneficiaries who had been prescribed and dispensed spectacles by the project was obtained from the state office of Sightsavers. The sample size was calculated based on i) the estimated probability of using spectacles of 50%; (ii) 95% confidence level; iii) margin of error +/- 5%; and iv) 10% non-response. The estimated sample size for each category (adults and children) was 430; participants were selected randomly from the beneficiary lists.

Data collection and analysis

All adult participants were approached in their homes; whereas children were assessed in schools during unannounced visits. For the in-depth interviews, ten adults were purposefully selected ensuring variations in sex, age and spectacle use.

Eight data collection teams were deployed. Each team comprised of two investigators, who conducted 5-6 interviews per investigator per day. The qualitative interviews were carried out simultaneously by the supervisors.

All survey data was collected electronically using the CommcareApp¹. All qualitative interviews were audio-recorded and transcribed verbatim. Data collectors were trained over two days and

¹ <https://www.commcarehq.org/home/>

quantitative data analysis was carried out using STATA 14 software. Qualitative data was analysed thematically.

Ethics

An ethics approval was obtained from the Vivekananda Mission Ashram Netra Niramay Niketan. Information on the study was provided to all participants in their local language and an informed written consent was obtained in all cases. To collect data from children aged <15 years, permission was sought from their parents/guardians. All participation was voluntary and data confidentiality was protected throughout the study.

Results

Use of spectacles by children

All 430 children approached for the study agreed to participate. The sample included more girls (56%) than boys (44%) and the median age was 14.8 (range 9-17) years.

Over 72% of children perceived their vision as either good (54%) or very good (18%). About two-thirds of children reported that they had attended a vision centre or eye camp with a vision problem in the past 12 months. The main reasons for visiting an eye care provider were blurred vision (28%), watering eyes (26%), reading or writing difficulty (16.5%) and pain in the eyes (16%).

In total, 401 out of 430 surveyed children (93%) were using spectacles on the day of the assessment with little difference between girls (92%) and boys (94%). Nearly half of those with spectacles reported using them occasionally and over a third (35%) used them often, with no differences between boys and girls. For 380 children with spectacles (95%), the pair of glasses they had was their first pair and 367 children (92%) had received their spectacles free of charge.

The main features valued by the children in their spectacles were good quality (30%), safety (22%), affordability (20%) and an attractive style (15%).

Among 29 children who were not wearing spectacles at the time of survey, 23 (79.3%) had stopped using spectacles, while the remaining six children had never managed to obtain the prescribed spectacles. The main reasons for discontinuing the use of spectacles were not liking wearing spectacles (six children), broken/lost spectacles (five children) and feeling uncomfortable (five children).

Use of spectacles by adults

Out of 430 adults selected for the study, 405 (94%) could be interviewed. 51% of participants were female and the mean age was 52.6 years. About two-thirds of participants could read and write, while a third said that they had never been to school. About 39% of respondents belonged to the Scheduled Caste and 12% were from Other Backward Class (OBC).

Over 77% of adults participants perceived their vision to be good (62.7%) or very good (15.1%). The majority had their eyes checked in vision centres (73%), while 16% attended outreach camps. About 47% of respondents had visited an eye care provider with an eye problem in the past 12 months. The proportion was higher among women (52%) than men (42%). The main reasons were blurred vision (59.1%), followed by watering eyes (11.9%) and pain in the eyes (11.4%).

370 out of 405 adult participants (91%) were using spectacles at the time of study. The compliance was slightly higher among women (93%) than men (90%). About 42% of respondents reported using their spectacles often, 28% used them when needed, and 29.5% used them occasionally. About 80% of respondents with spectacles had paid for their spectacles at an average price of INR 370. The features of spectacles that the study participants appreciated most were good quality (43.5%) and safety (28.9%). For 75% of adults with spectacles, the pair they had was their first pair, while 25% had used spectacles before. Qualitative data confirmed that the majority of respondents had positive experiences of spectacles and improved vision.

Out of 35 adults who were not using spectacles at the time of survey, 22 (62.9%) had stopped wearing spectacles, and 13 had never obtained spectacles for their prescription. The main reasons for discontinuing spectacle use were “spectacles were broken or lost” (45.5%) and “uncomfortable to wear” (27.3%).

Discussion

The compliance with spectacle wear for both children and adults benefiting from the Sunderbans Eye Health Service Strengthening Project was very high and there were no major differences by gender. However, adults were more likely to report using spectacles often, while children were more likely to report using them occasionally. It is important that both teachers and parents are educated about a need to monitor the regular use of spectacles by children.

Adults, who were wearing spectacles, primarily valued good quality and safety of spectacles. For children, quality, safety, affordable price and attractive style were important. The main reasons for not wearing spectacles among adults were broken/lost spectacles and feeling uncomfortable. The main reason for children was not liking wearing spectacles followed by broken/lost spectacles and feeling uncomfortable. It is important that eye care providers consult patients on the use of spectacles, how to fit them better in their day to day life and how to replace them once they are lost or broken.

The study did not find any evidence of parental disapproval or stigma associated with wearing spectacles, although it was evident that liking or disliking spectacles and the style of spectacles was more important for children than adults. The findings suggest that communication campaigns involving popular images and role models are important in influencing children's behaviour and counteracting potential peer pressure. Interestingly among adults, we did not find any evidence of negative attitudes or stigma of women wearing spectacles, often reported in the literature. The study did not distinguish between the use of spectacles for near and distance vision. Given that the mean age of participants was 52 years, it is possible that the majority of adult respondents had presbyopia spectacles used occasionally for near vision activities. Attitudes towards spectacles among younger women, who require continuous use of spectacles for distance, may be different.

The study has a number of limitations. Since the community mobilisers were working very closely with the community under this project, it is possible that the community and the schools had some prior information about the study resulting in a very high compliance rate. Compliance was measured by the presence of spectacles on the day of the survey and may not reflect actual usage. The findings need to be taken into account when planning other eye care projects aiming to reduce avoidable visual impairment among adults and children in India and other settings.

Section I: Contextual section and methodology

Introduction

Sightsavers is an international development organisation that works with partners in over 30 countries to eliminate avoidable blindness, and fights for the rights and needs of people with disabilities. Sightsavers' work in India has enabled thousands of people to lead lives of independence and dignity. Sightsavers has been working with local partners to strengthen organisations and communities, and has supported the treatment of millions of people with eye disorders. It has educated, counselled, trained and rehabilitated people who are visually impaired or blind, and helped extend the reach of eye services to the least served areas of India².

Sightsavers has been working in the Sunderbans for more than ten years and has supported the establishment of eye care services to provide care in this underserved and complex geographical area.

Sightsavers Sunderbans Eye Health Service Strengthening Project has been implemented over a period of five years with funding from the Seeing is Believing (SiB) initiative. The project was designed to contribute towards the reduction of avoidable visual impairment in the Sunderbans area of West Bengal. It is aligned with India's National Eye Care Plan, Vision 2020 priorities and State project implementation plan (PIP). The project worked to ensure that trained staff are in place at primary, secondary and tertiary levels, and referral links are established and functional. The activities undertaken broadly align with India's VISION 2020 priorities, which are cataract, refractive error, low vision and diabetic retinopathy.

Background

According to the World Health Organisation (WHO), there are an estimated 253 million visually impaired people worldwide, 90% of whom live in developing countries³. The two main causes of visual impairment globally are uncorrected refractive errors (42%) and cataract (33%)⁴. Refractive errors include myopia (short sightedness), hyper-metropia (long sightedness), astigmatism and presbyopia and their correction could be by spectacles, contact lenses or refractive surgery⁵. Correction of refractive errors with appropriate spectacles is among the most cost-effective vision improving interventions in eye care. As such, it is an appropriate treatment in developing countries, which leads to significant functional and lifestyle improvements.

Correction of refractive errors is a priority of Vision 2020. However, if the person does not wear the spectacles, the efforts to correct refractive errors are not effective. Hence, every effort should be made to remove obstacles to spectacle availability and wear.

² <http://www.sightsaversindia.in>

³ Bourne RRA, Flaxman SR, Braithwaite T, Cicinelli MV, Das A, Jonas JB, et al.; Vision Loss Expert Group. [Magnitude, temporal trends, and projections of the global prevalence of blindness and distance and near vision impairment: a systematic review and meta-analysis](#). Lancet Glob Health. 2017 Sep;5(9):e888–97

⁴ World Health Organization Universal eye health: a global action plan 2014-2019. World Health Organization. 2013.

⁵ Dandona R and Dandona L (2001): Refractive error blindness. Bulletin World Health Organization; 79:237-243

The compliance of patients with spectacle wear has been associated with various social factors, availability of services and individual patient characteristics⁶. However, research on barriers to services in such complex geographical regions as the Indian Sunderbans remains limited, restricting opportunities for the development of an effective programmatic response.

The study presented here aims to examine the compliance with spectacle wear among adults and children who had been dispensed spectacles 6-18 months preceding the research. The study was hosted within the Sunderbans Eye Health Service Strengthening Project and helped the project to determine the compliance and understand the factors driving patient health seeking behaviour.

Research questions

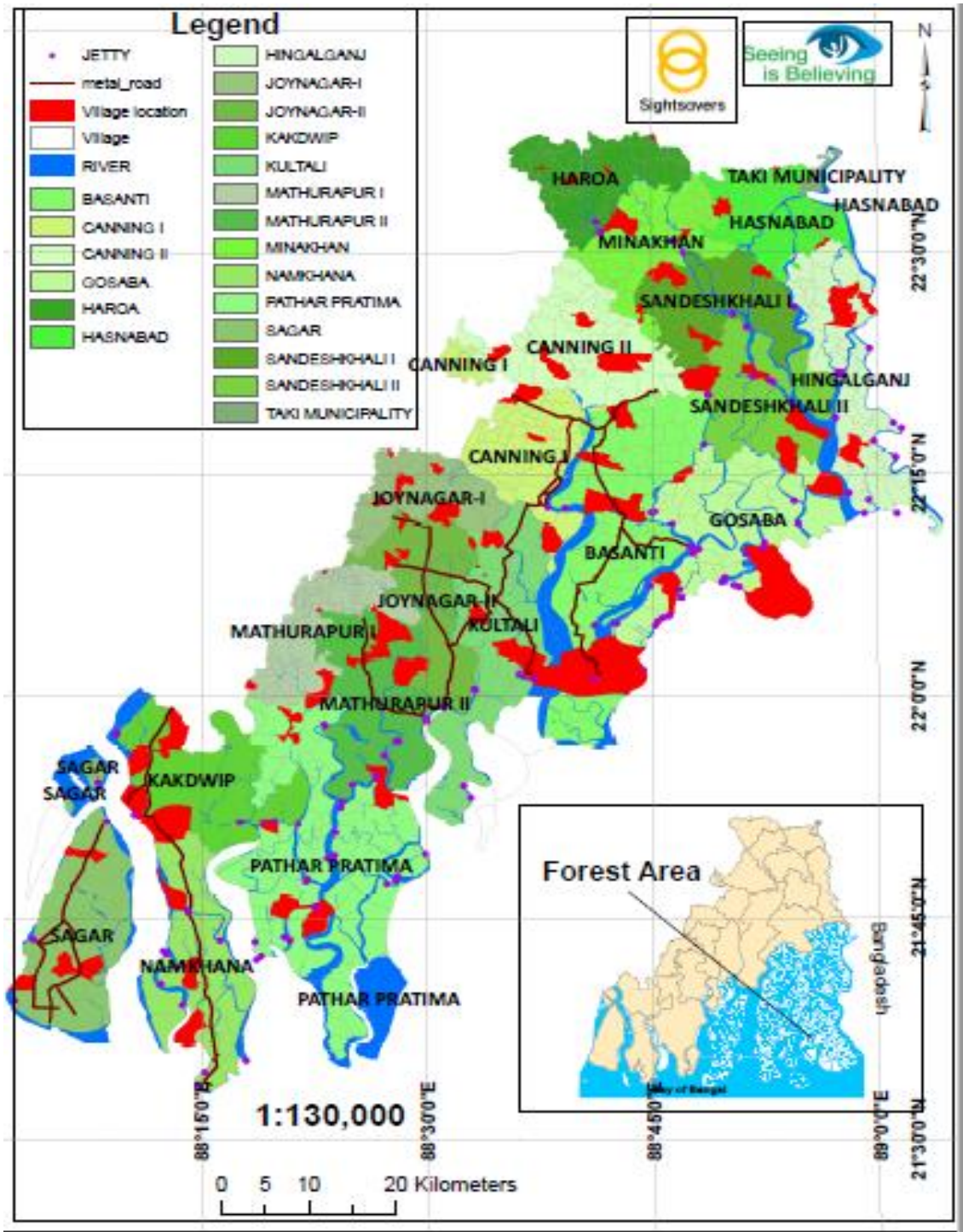
This study aimed to answer the following research questions:

- What percentage of adults and children prescribed and dispensed spectacles from the project continue using them 6-18 months following dispensation?
- What are the main reasons for not wearing spectacles amongst adults and children?

Project participants who were compliant were also asked to report frequency of spectacle use, which was categorised as 'often'. i.e. regular use of spectacles as recommended in the prescription; 'when needed,' i.e using spectacles on all occasions to perform certain activities; and 'occasionally,' i.e using spectacles once in a while or irregularly.

⁶ Gogate, et al. (2013): Spectacle Compliance amongst rural secondary school children in Pune District, India. Indian Journal of Ophthalmology, Vol. 61 No.1.

Figure 1. Map of the Sunderbans



Methodology

Study area

Sunderbans is a complex geographical area spread over two districts of West Bengal, covering 19 administrative blocks. It is an archipelago of 106 islands, of which 52 are inhabited with the total population of 4.7 million; the rest is a reserved forest area. The region has a hard topography and is inundated with rivers of different sizes flowing to the Bay of Bengal. Almost half of the 4.7 million people (47%) belong to the historically marginalised groups such as Scheduled Castes and Tribes. More than 40% of the households live below the poverty line⁷ and 13% are officially declared as the “poorest of the poor”.⁸

The public health system in the Sunderbans delivers preventive and curative services at multiple levels and through outreach workers. The public facilities range from two Sub-divisional hospitals with specialist physicians and inpatient services, to about 800 small sub-centres (SC) at the village level staffed by trained multi-purpose workers. Within this range there are 19 block level facilities (nine Rural Hospitals (RH), ten Block Primary Health Centres (BPHCs) and 47 Primary Health Centres (PHCs)) arranged to provide secondary and primary care. The Block level facilities (BPHC/RH) are also referral units for primary health care facilities within each block.⁹ Primary eye health services are available only at the BPHC level.

A total of 17 Vision Centres have been established in the project area to provide refraction and spectacles at a subsidised rate. As part of the project, eye screening of schoolchildren was also conducted and free spectacles were dispensed to the children diagnosed with refractive error. For adults, free spectacles were provided to the patients identified as poor, while others were referred to vision centres, where spectacles were available at a subsidised price.

Target group

The Primary Target Group for the project included children (<18 years of age) and adults (18+ years) who were prescribed and dispensed spectacles 6-18 months prior to the study.

Research design

The study had a mixed methods design using both quantitative and qualitative data collection approaches. To collect quantitative data, a survey of patients who had received spectacles 6-18 months prior to the study was conducted using a structured questionnaire. Qualitative data was collected using in-depth face to face interviews, which used a semi-structured topic guide.

⁷ Below Poverty Line is an economic benchmark and poverty threshold used by the government of India to indicate economic disadvantage and to identify individuals and households in need of government assistance and aid. Planning Commission has a fixed poverty line at Rs.28.65 per capita daily consumption in cities and Rs.22.42 in rural areas

⁸ Health Care in Sunderbans : Challenges and Plan for a better Future, Institute of Health Management and Research, Jan 2012

⁹ Health Care in Sunderbans : Challenges and Plan for a better Future, Institute of Health Management and Research, Jan 2012

Study definition

Uncorrected refractive error is defined as presenting visual acuity less than 6/12 that can be corrected to 6/12 or better with a pinhole¹⁰.

A non-complaint is any eligible child or adult who was not wearing spectacles on the day of the assessment. The compliance rate was measured based on one visit only.

Sampling

Sample size

The study adopted a single stage sampling approach. The lists of adult and children who had been prescribed and dispensed spectacles under the project was obtained from the state office of Sightsavers. The project served 19 administrative blocks of North and South 24 Parganas district of West Bengal, and there were 17 Vision Centres (VC) under the project at the time of the study. However, one Vision Centre (Nazat VC), which had started operating only in December 2016, was excluded. The beneficiaries of the remaining 16 VCs, who had been prescribed and dispensed spectacles within 6-18 months preceding the study, formed the study population.

The following formula was used to calculate the sample size:

$$n = \frac{z^2 * p * (1 - p)}{c^2}$$

Where:

n = required sample size

z = Z value (e.g. 1.96 for 95% confidence level)

p = percentage picking a choice

c = confidence interval, expressed as decimal

The sample size was based on the following assumptions: i) probability of an adult or child using spectacles is 50%; (ii) 95% confidence level; iii) margin of error (confidence interval) +/- 5%. The estimated sample size for each category (adults and children) was 385. The sample size was rounded off to 430 each to allow for 10% non-response. Participants were selected randomly from the beneficiary lists.

All adult participants were approached in their homes; children were assessed in schools during unannounced visits. For children aged <15 years, permission was sought from their parents or guardians, who were also present during the interview.

¹⁰ Marmamula S, Keeffe JE, Raman U et al. Population-based cross-sectional study of barriers to utilization of refraction services in South India: Rapid Assessment of Refractive Errors (RARE) Study. BMJ Open 2011; 1: e000172

For the in-depth interviews, ten adults were purposefully selected ensuring variations in sex, age and spectacle use.

Study tools and training

The questionnaire was developed by the study team based on the review of literature. All tools were developed in English and then translated into the local language i.e. Bengali; this was followed by piloting and validation of the translation. All survey data was collected electronically using the Commcare¹¹ Application. All qualitative interviews were audio-recorded and transcribed verbatim.

Data collectors were trained over two days on the study protocol, obtaining of consent, administering of the tools and the process of data collection. The training was conducted in English and Bengali.

Data collection

Eight survey teams were deployed for the study. Each team comprised of two investigators, who conducted 5-6 interviews per investigator per day. Qualitative interviews were carried out simultaneously by the supervisors. The completed interviews were uploaded to a central server and checked to ensure quality.

Data analysis

The quantitative data analysis was carried out using STATA 14 software. Descriptive statistics were used to describe the compliance. Chi-square was used to test for significant differences, where appropriate. The transcripts of the qualitative interviews were translated into English, coded and analysed thematically.

Ethical considerations

An ethics approval for the study was obtained from the Vivekananda Mission Ashram Netra Niramay Niketan. Clearance was also obtained from the local administrative authorities. Information on the study and its purpose was provided to all participants in their local language and an informed written consent was obtained in all cases. All participation was voluntary; participants could withdraw their consent at any point without any negative consequences for them. To collect data from children aged <15 years, permission was sought from their parents/guardians. For school-based interviews, consent was also obtained from the schoolteacher. All information was anonymised and data confidentiality was protected at all stages of the study. No one except the study team had access to the data.

¹¹ <https://www.commcarehq.org/home/>

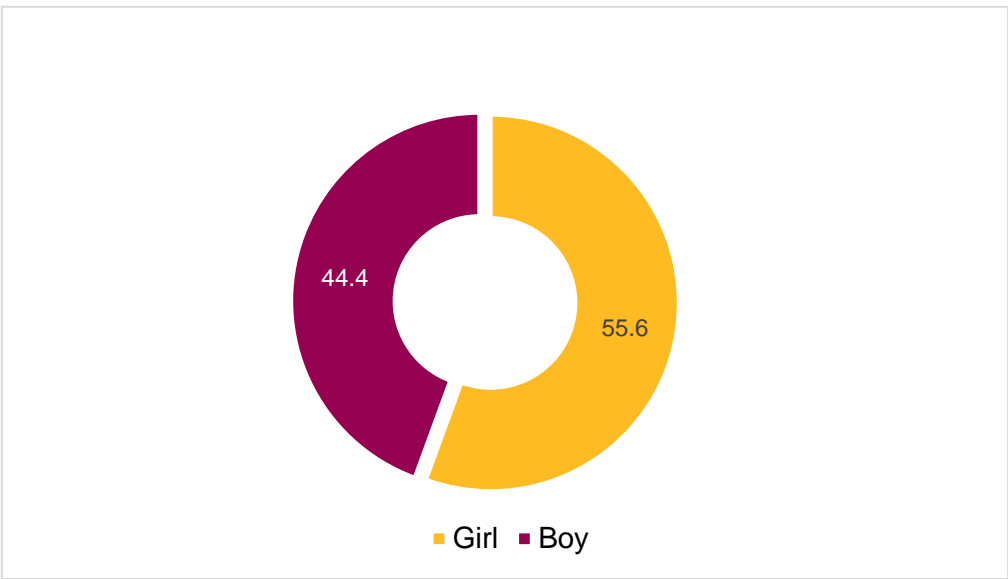
Section II: Profile of the participants and spectacle compliance

Spectacle compliance among children

Participant characteristics

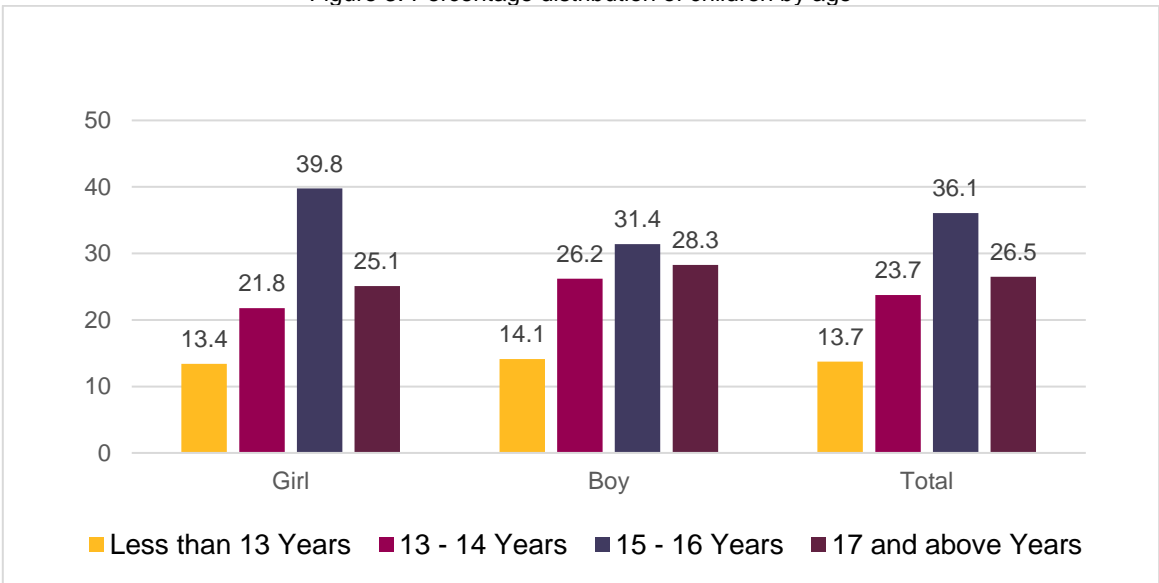
In total, 430 children were approached for the study. All agreed to participate. The sample included more girls (56%) than boys (44%) (figure 2), which is similar to the overall study population with more girls having been dispensed spectacles from the projects.

Figure 2. Percentage distribution of children by sex



The median age of the respondents was 14.8 (range 9-17) years. Over 36% of children in the sample were aged 15-16 years (Figure 3).

Figure 3. Percentage distribution of children by age



Over 39% of children were studying at the secondary level (class IX-X) and another 37.7% were at the upper primary or middle level. The majority of children (78%) were Hindus and one in five (21%) were Muslims. Nearly half of the children belonged to the scheduled caste. Fathers' occupation for more than two-fifths of the children was daily wage labour, followed by agriculture (25%) and small businesses (18%). The mean size of the children's households was 5.1 (Table 1).

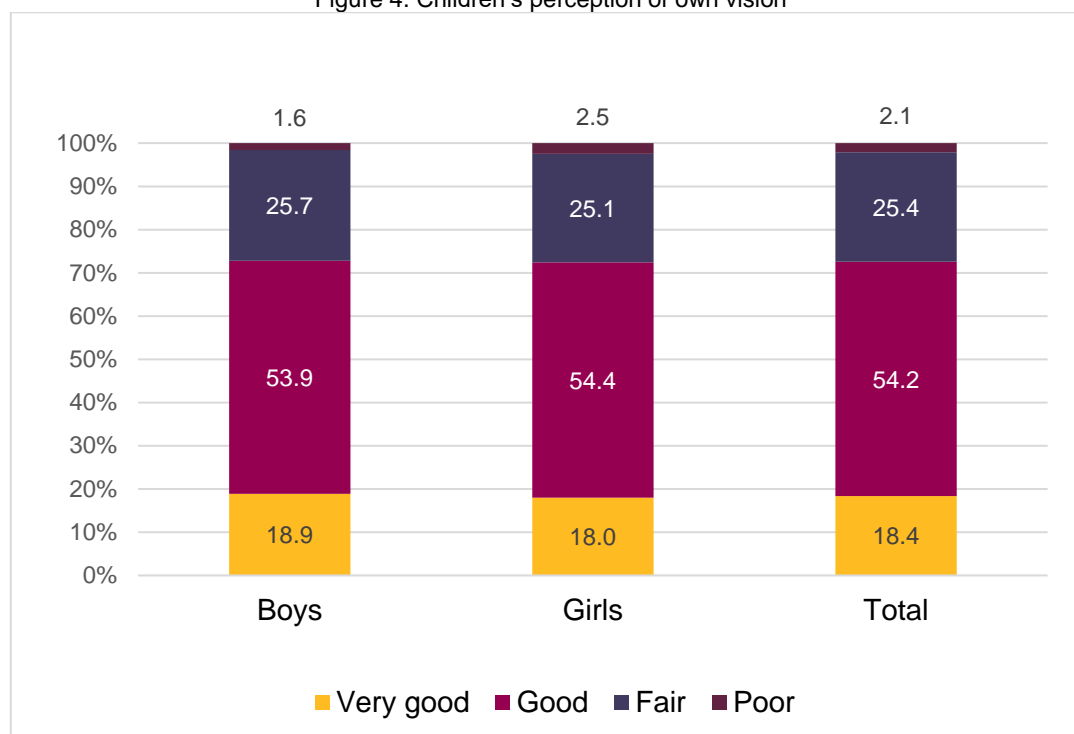
Table 1. Educational and social background of children

Respondent's education and social background	Boys N (%)	Girls N (%)	Total N (%)
Education			
Lower primary	13	17	30
	6.8	7.1	7.0
Upper primary or middle	84	78	162
	44.0	32.6	37.7
Secondary	63	105	168
	33.0	43.9	39.1
Higher secondary	31	39	70
	16.2	16.3	16.3
Religion			
Christian	3	3	6
	1.6	1.3	1.4
Hindu	157	179	336
	82.2	74.9	78.1
Muslim	31	57	88
	16.2	23.9	20.5
Caste			
OBC	34	28	62
	17.8	11.7	14.4
Schedule caste	86	126	212
	45.0	52.7	49.3
Schedule tribe	7	2	9
	3.7	0.8	2.1
Other	61	83	144
	31.9	34.7	33.5
Don't know	3	0	3
	1.6	0.0	0.7
Total	191	239	430

Self-perception of vision and eye health seeking behaviour

More than half of the children perceived their vision to be good and 18% said it was very good with little difference between boys and girls. About 2% of children (1.6% of boys and 2.6% of girls) described their vision, as poor (Figure 4).

Figure 4. Children's perception of own vision



One-third of children reported visiting Vision Centres for an eye health check-up and over 45% attended outreach activities in the community or in the school, although the majority (52.1%), and particularly boys (57.1%) named Vision Centres as their preferred place for treatment (table 2).

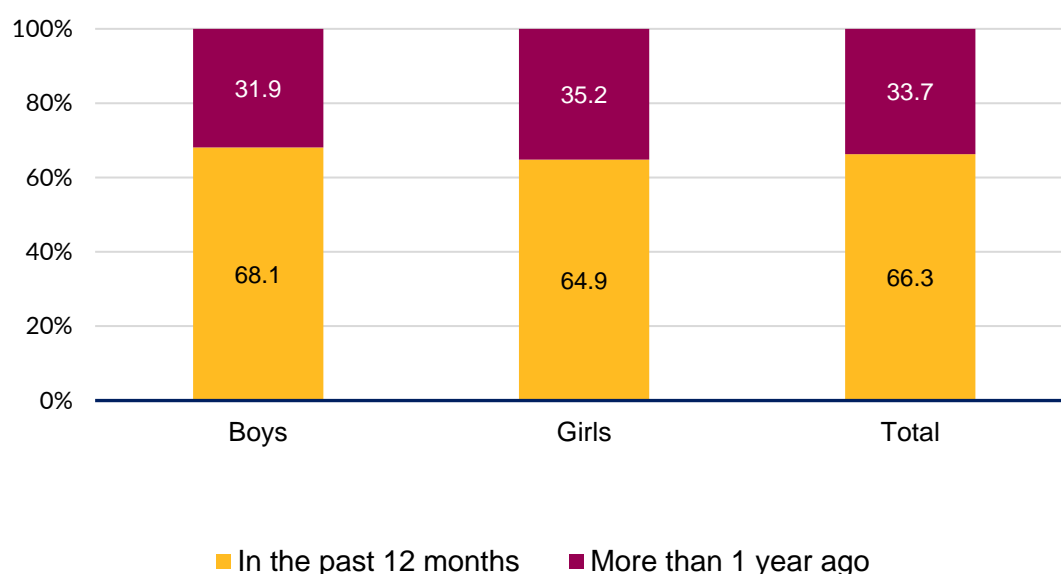
Table 2. Preferred place for eye check-up and treatment of eye problems among children

Place for eye check-up/treatment	Boys N (%)	Girls N (%)	Total N (%)
Regular eye check-up			
Eye camp	84 44.0	110 46.0	194 45.1
Government hospital/PHC	15 7.9	17 7.1	32 7.4
Private hospital/clinic/doctor	27 14.1	33 13.8	60 14.0
Vision Centre	65 34.0	79 33.1	144 33.5
First place preferred to seek eye treatment			
Eye camp	60 31.4	87 36.4	147 34.2

Place for eye check-up/treatment	Boys N (%)	Girls N (%)	Total N (%)
Government hospital/PHC	3	7	10
	1.6	2.9	2.3
Private Hospital/clinic/doctor	19	30	49
	10.0	12.6	11.4
Vision Centre	109	115	224
	57.1	48.1	52.1
Total	191	239	430

About two-third of children reported that they had attended a Vision Centre or an eye camp in the past 12 months (Figure 5).

Figure 5. Last visit to Vision Centre or eye camp among children



Over 28% of those who had visited an eye care provider with an eye problem reported blurred vision, followed by watering eyes (26.2%) and reading or writing difficulty (16.5%) and pain in the eyes (16%). Girls were more likely to report blurred vision and pain in the eyes, while boys were more likely to report watering eyes (Table 3).

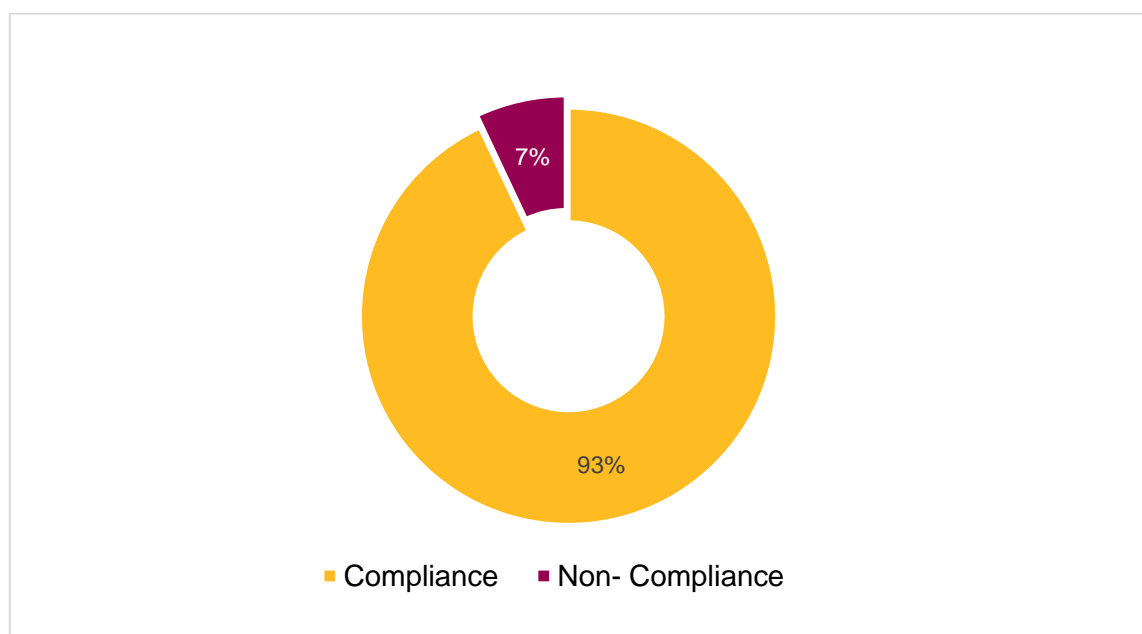
Table 3. Main symptoms/complaints during last visit to Vision Centre/eye camp among children

Main symptom/complain	Boys n (%)	Girls n (%)	Total n (%)
Reading or writing difficulty	34	37	71
	17.8	15.48	16.51
Blurriness in eyes	46	75	121
	24.08	31.38	28.14
Pain in eyes	24	45	69
	12.57	18.83	16.05
Redness in eyes	21	19	40
	10.99	7.95	9.3
Watering eyes	58	55	113
	30.37	23.01	26.28
Others	8	8	16
	4.19	3.35	3.72
Total	191	239	430

Compliance with spectacles among children

In total, 401 out of 430 surveyed (i.e. 93% of children) were using their spectacles on the day of the assessment (Figure 6) with little difference between girls (92%) and boys (94%).

Figure 6. Spectacle compliance among children



Nearly half of those who were using spectacles at the time of the survey said that they used their spectacles occasionally, about 35% used them often and 12% used them only when needed. There was no gender difference in the frequency of spectacles usage.

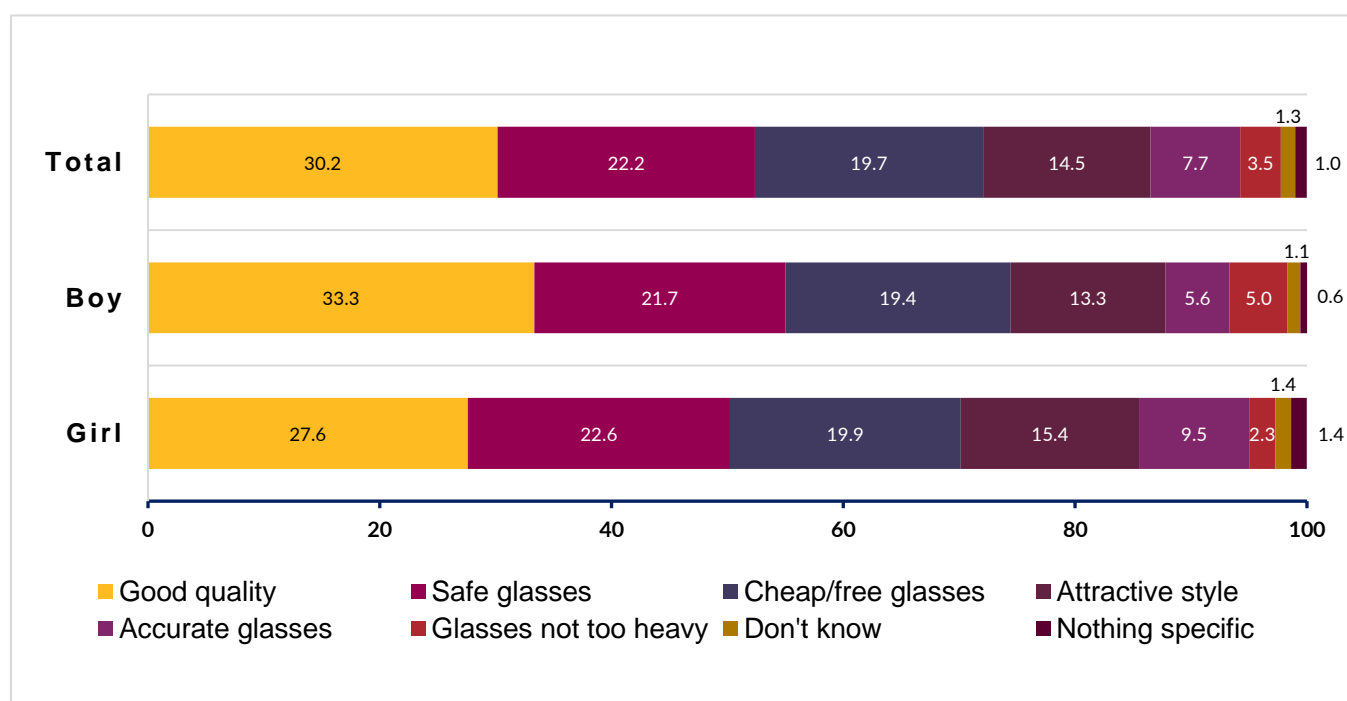
During the qualitative interviews, children explained how they had experienced vision problems before they were diagnosed with refractive error:

“Last year, I got my eyes examined for the first time at the camp organised ... at our school. I used to face problems in seeing letters at a distance. The doctor told me that I had a problem of long distance vision. I was advised to use spectacles ...” (IDI, girl aged 15 years)

When asked about the costs of the current pair of spectacles, 367 out of 401 children with glasses (92%) said that they had received their spectacles free of charge. Those who paid for their spectacles paid on average INR 520. During the interviews, a number of parents said that they were happy to receive spectacles for free, as it helped those families who were on low incomes.

The children who were using spectacles at the time of the survey were asked what they appreciated about their spectacles. Nearly one-third of the children said that their spectacles were of good quality; over a fifth said that their glasses were safe (22%), another fifth said that they were affordable (20%) and about 15% mentioned an attractive style (Figure 7).

Figure 7. Main requirement for spectacles among current users

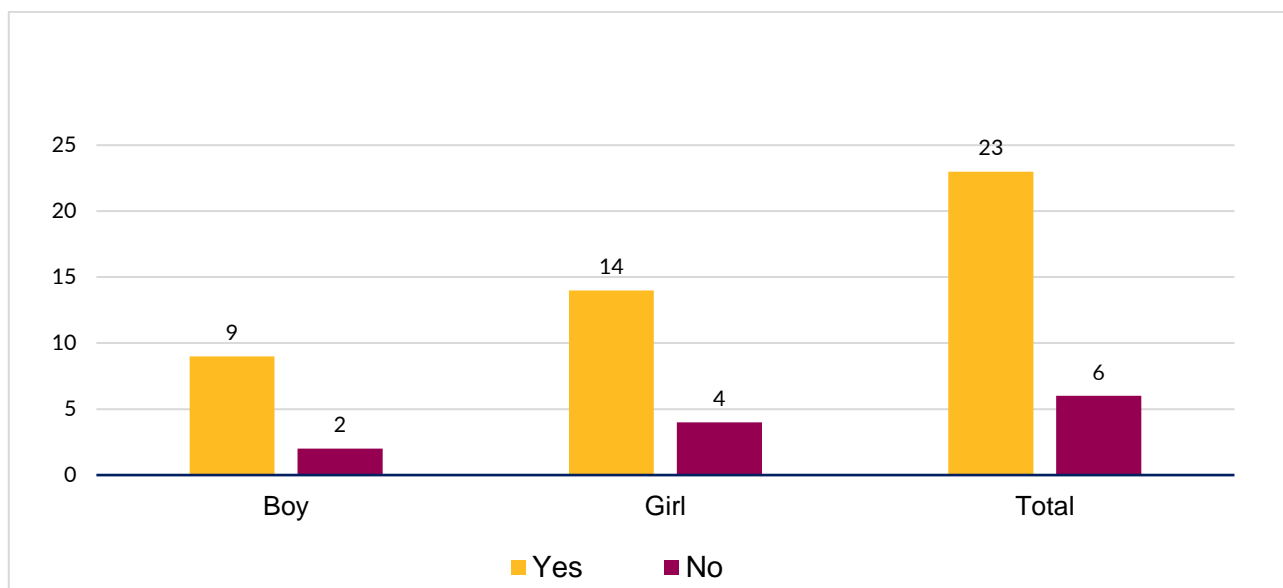


For 380 out of 401 children with spectacles (95%), it was their first pair, while 21 children (5%) had used spectacles before.

Reasons for not wearing spectacles among children

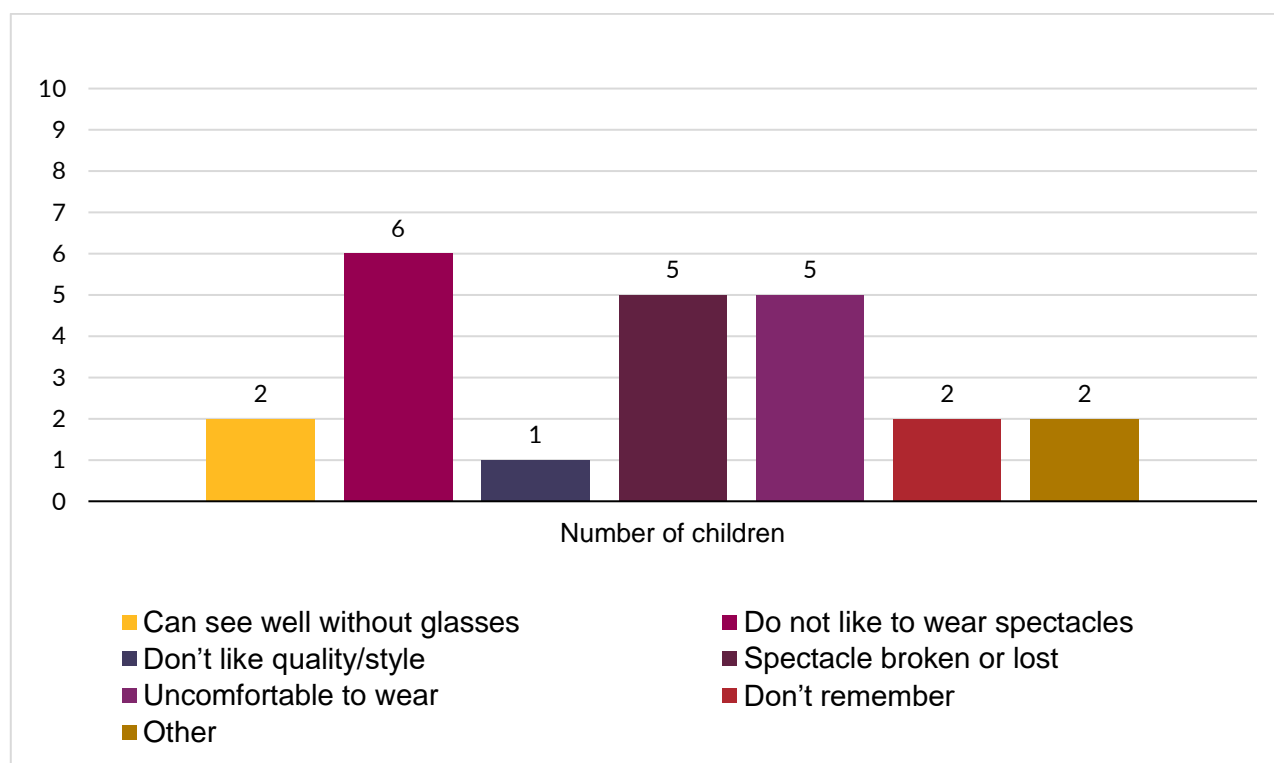
Among 29 children who were not wearing spectacles at the time of the survey, 23 children (14 girls and 9 boys; 79.3%) had stopped using spectacles received from the project; the remaining six children were prescribed spectacles but did not manage to get them (Figure 8).

Figure 8. Number of children who have ever had spectacles



The main reasons for stopping using spectacles were a dislike of wearing spectacles; the spectacles were broken or lost and feeling uncomfortable (figure 9).

Figure 9. Main reasons for discontinuing spectacle use among children

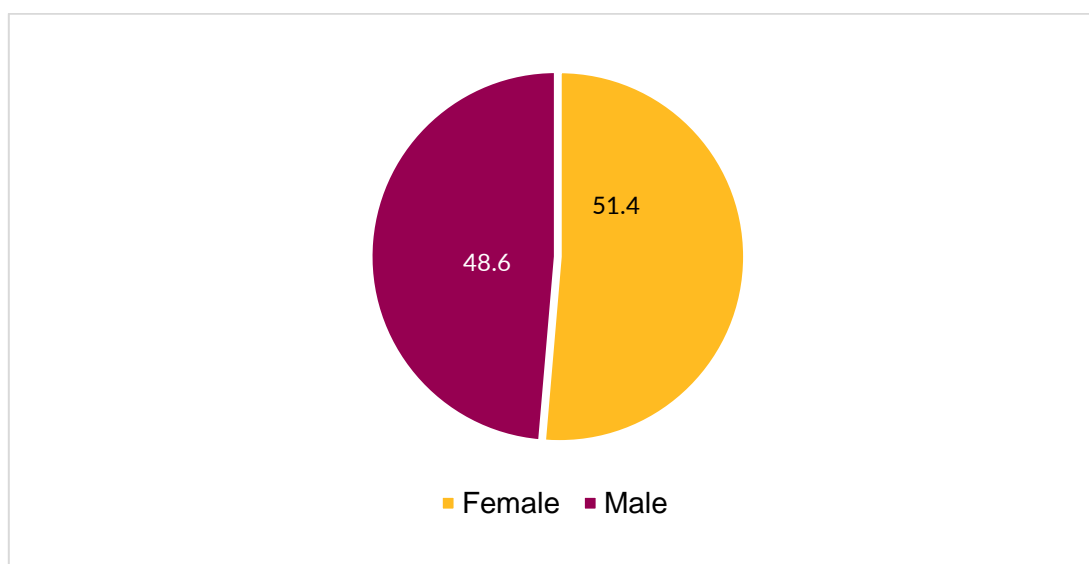


Spectacle compliance among adults

Participant characteristics

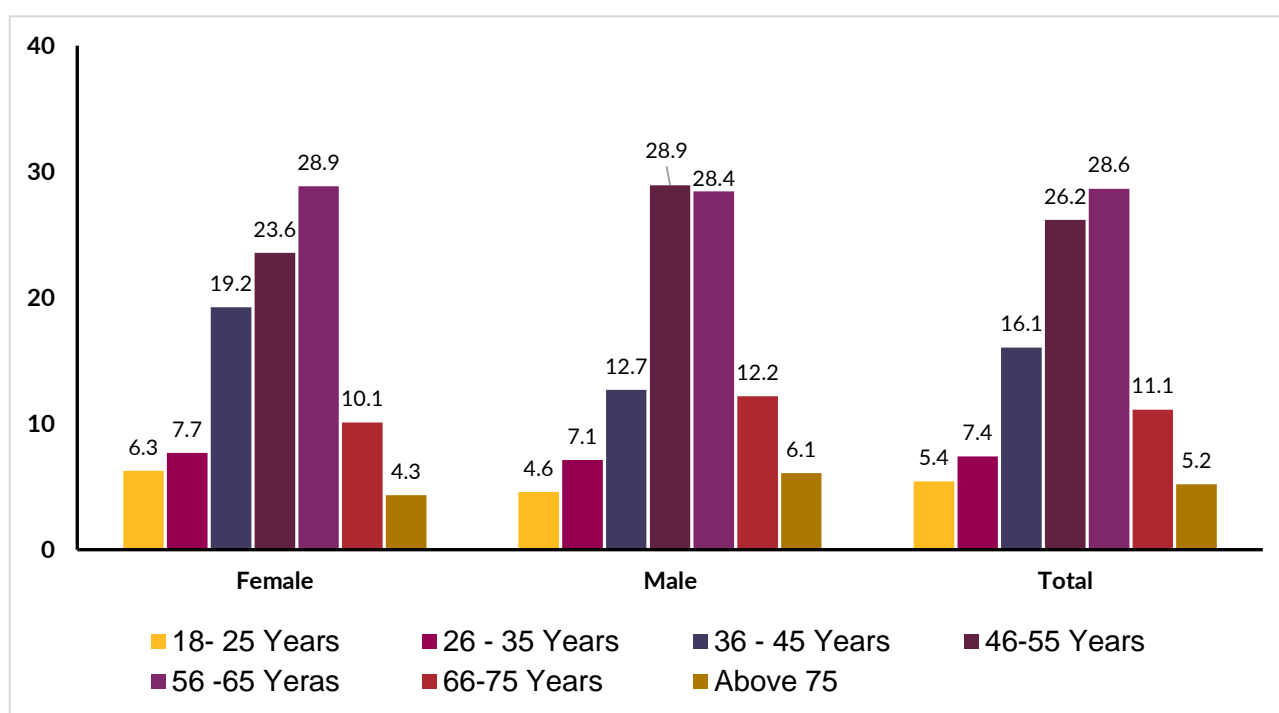
Out of 430 adults sampled in this study, 405 could be successfully interviewed (94% response rate). The majority of those who could not be interviewed were male (19 out of 25), mainly because they were not at home at the time of the study. Among the participants interviewed, 51% were female (figure 10).

Figure 10. Percent distribution of adults by sex



The mean age of those who were interviewed was 52.6 years (51 years for women and 54 years for men) (Figure 11).

Figure 11. Percent distribution of adults by age



About two-thirds of participants could read and write, while a third said that they had never been to school. Women were less likely to be literate (53%) than men (79%). Among those who had attended school, over a third had completed lower primary level only, and about 31% had completed upper primary or middle level.

Nearly 83% of respondents (75% females and 92% males) were married. About one-fifth of females were widowed. The average household size was five (range 1-12).

About two-thirds of study participants were Hindus (66%) and about a third were Muslims (34%). About 39% of respondents belonged to the Scheduled Caste and 12% were from Other Backward Class (OBC) (Table 4).

Table 4. Educational and social background of adults

Respondent's education and social background	Female N (%)	Male N (%)	Total N (%)
Religion			
Hindu	143	125	268
	68.8	63.5	66.2
Muslim	65	72	137
	31.3	36.6	33.8
Caste			
OBC	25	24	49
	12.0	12.2	12.1
Schedule Caste	83	73	156
	39.9	37.1	38.5
Schedule Tribe	7	3	10
	3.4	1.5	2.5
Other	25	24	49
	12.0	12.2	12.1
Don't know	2	5	7
	1.0	2.5	1.7
Education			
Yes, can read or write	110	155	265
	52.9	78.7	65.4
Yes, attended school	113	155	268
	54.3	78.7	66.2
Total	208	197	405
Level of education			
Lower primary	48	48	96

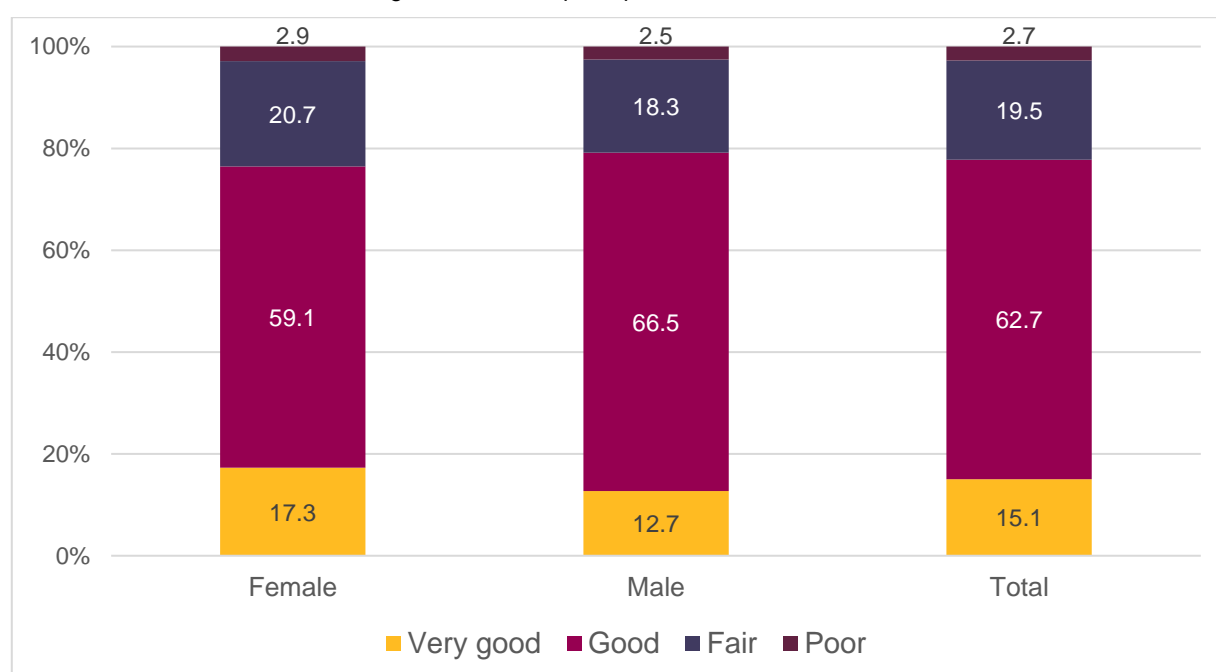
Respondent's education and social background	Female N (%)	Male N (%)	Total N (%)
	42.5	31.0	35.8
Upper primary or middle	33	51	84
	29.2	32.9	31.3
Secondary	19	27	46
	16.8	17.4	17.2
Higher secondary and above	13	29	42
	11.5	18.7	15.7
Total (ever attended school)	113	155	268

With regards to occupation, 46% of participants were wage labourers, one fifth (20%) were involved in small businesses and another fifth (20%) worked in agriculture. Women were more likely to report wage labour (55%) than men (42%).

Self-perception of vision and eye health seeking behaviour among adults

About two-thirds of participants perceived their vision to be good and another 15% perceived it to be very good. Women were more likely to describe their vision as very good (17%) than men (13%) (Figure 12). Interestingly, there were no significant differences in self-perception of vision between those who were wearing spectacles at the time of the study and those who were not.

Figure 12. Adult's perception of their own vision



The majority of adult participants visited Vision Centres for eye check-up (73%), while 16% relied on eye camps. Vision Centres were reported to be a preferred eye care provider by 83% of respondents with no significant gender differences (Table 5). Qualitative interviews corroborated

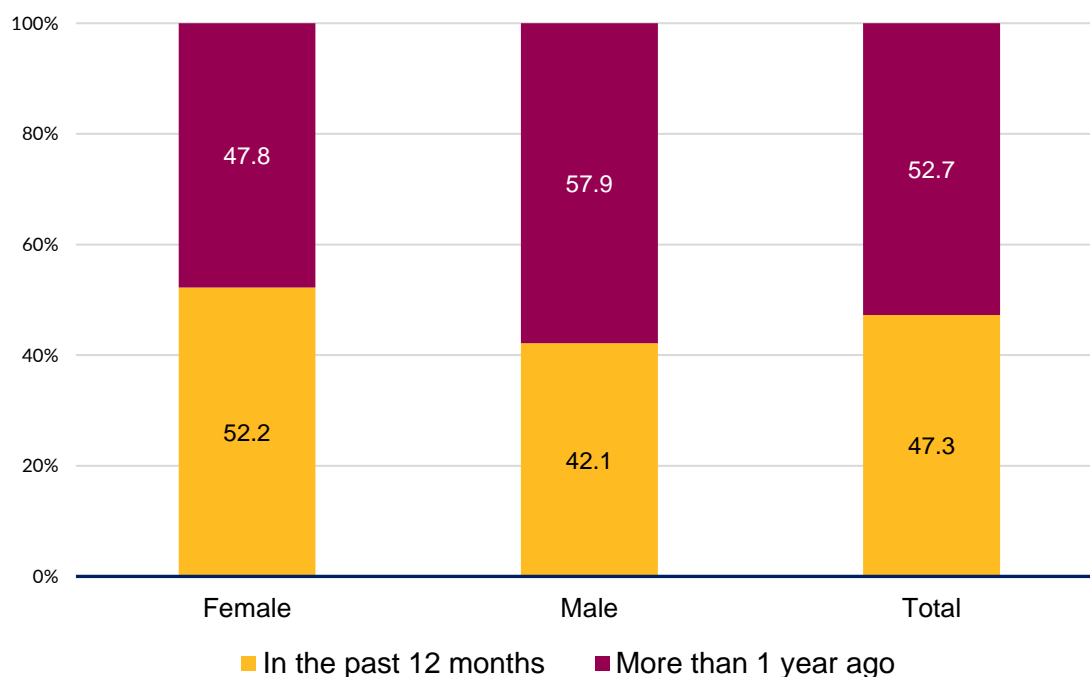
these findings, showing that people preferred Vision Centres because they were located nearby and were easily accessible.

Table 5. Preferred place for eye check-up and treatment of eye problems among adults

Place for eye check-up/treatment	Female N (%)	Male N (%)	Total N (%)
Regular eye check-up			
Eye camp	34	29	63
	16.4	14.7	15.6
Government hospital/PHC	5	6	11
	2.4	3.1	2.7
Private hospital/clinic/doctor	18	18	36
	8.7	9.1	8.9
Vision Centre	151	144	295
	72.6	73.1	72.8
First place preferred to seek eye treatment			
Eye camp	23	18	41
	11.1	9.2	10.2
Government hospital/PHC	1	2	3
	0.5	1.0	0.7
Private hospital/clinic/doctor	12	11	23
	5.8	5.6	5.7
Vision Centre	172	165	337
	82.7	84.2	83.4
Total	208	196	405

About 47% of survey respondents reported that they had attended a Vision Centre or an eye camp with an eye problem in the past 12 months. This proportion was much higher among women (52%) than men (42%) (Figure 13).

Figure 13. Last visit to a VC or eye camp for an existing eye condition among adults



The main reason for visiting an eye care provider was blurred vision (59.1%) followed by watering eyes (11.9%) and pain in the eyes (11.4%). Men were more likely to report blurred vision (61.7%) than women (56.5%) (Table 6).

Table 6. Main symptoms/complaints during last visit to Vision Centre/eye camp among adults

Main symptom/complaint	Female N (%)	Male N (%)	Total N (%)
Blurriness in eyes	117	121	238
	56.5	61.7	59.1
Watering eyes	27	21	48
	13.0	10.7	11.9
Pain in the eyes	24	22	46
	11.6	11.2	11.4
Reading or writing	11	10	21
	5.3	5.1	5.2
Redness in eyes	8	20	28
	3.9	10.2	7.0
Threading a needle	13	0	13
	6.3	0.0	3.2
Others	7	2	9
	3.4	1.0	2.2
Total	207	196	403

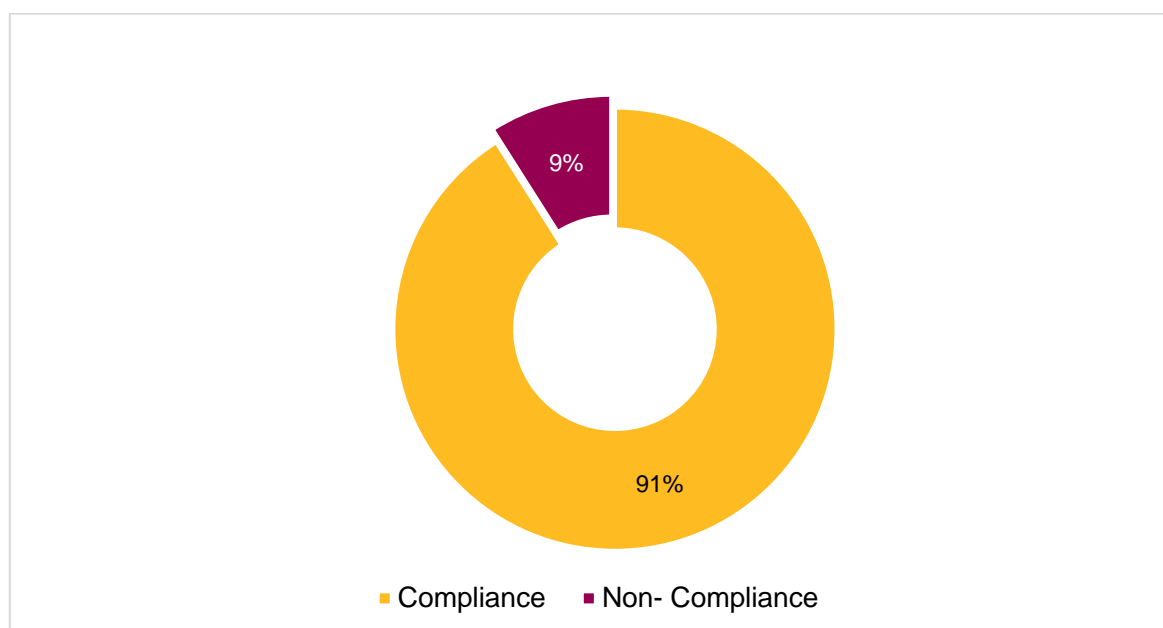
The majority of qualitative interview participants were aware of the need for regular eye examinations and changes in prescription, as advised by the doctor:

“Regular eye examinations keep our eyesight healthy” (IDI with female, aged 37 years)

Use of spectacles among adults

In total, 370 out of 405 adult participants (91%) were using prescribed spectacles at the time of survey. The compliance was slightly higher among women (93%) than men (90%) (Figure 14).

Figure 14. Spectacle compliance among adults



Among 370 adults who were using spectacles, 42% reported using them often, 28% used them when needed and 29.5% used them occasionally. Men were more likely to report using spectacles often (46.3%) than women (38.3 %) (Table 7).

Table 7. Frequency of spectacle use by gender

Frequency of spectacle use	Female N (%)	Male N (%)	Total N (%)
Often	74	82	156
	38.34	46.33	42.16
Always, when I need	60	45	105
	31.09	25.42	28.38
Occasionally	59	50	109
	30.57	28.25	29.46
Total	193	177	370

Among 370 adults with spectacles, 80% reported that they had paid for their spectacles and 20% had received their spectacles free of charge. The average price for those who had paid was INR 370.

Qualitative data confirms that the majority of those who were wearing spectacles at the time of the study had positive experiences of spectacles and improved vision:

“Problems of watering eyes and headache are no more [there] after I started using spectacles.” (IDI with male aged 41years)

“Daily activities can be done smoothly, like thread a needle or cooking. So I feel good about it.” (IDI with female aged 45)

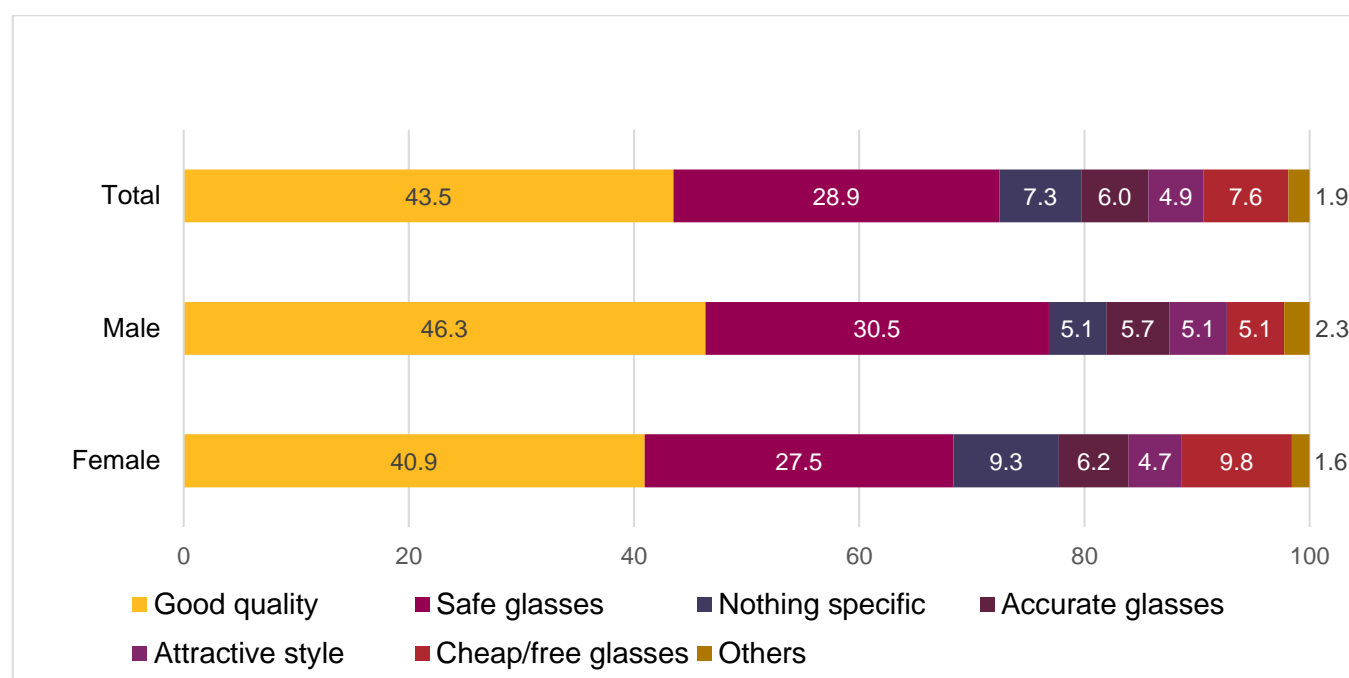
“I did not have the habit of wearing glasses so initially there was a problem. I do wear glasses every day but occasionally, not all through the day...” (IDI with female, aged 37 years)

Very few adults were dissatisfied with their spectacles. For example, one female with bi-focal spectacles explained that she continued experiencing vision problems:

“I got my eyes tested... in last one year and have taken spectacles. I am not very satisfied. My problems still exist.” (IDI with female aged 52 years)

When asked about the features of spectacles that the study participants appreciated most, 43.5% of respondents (40.9% female and 46.3% male) valued good quality and 28.9% (27.5% female and 30.5% male) appreciated safety (Figure 15).

Figure 15. Main requirements for spectacle use among adult spectacle users

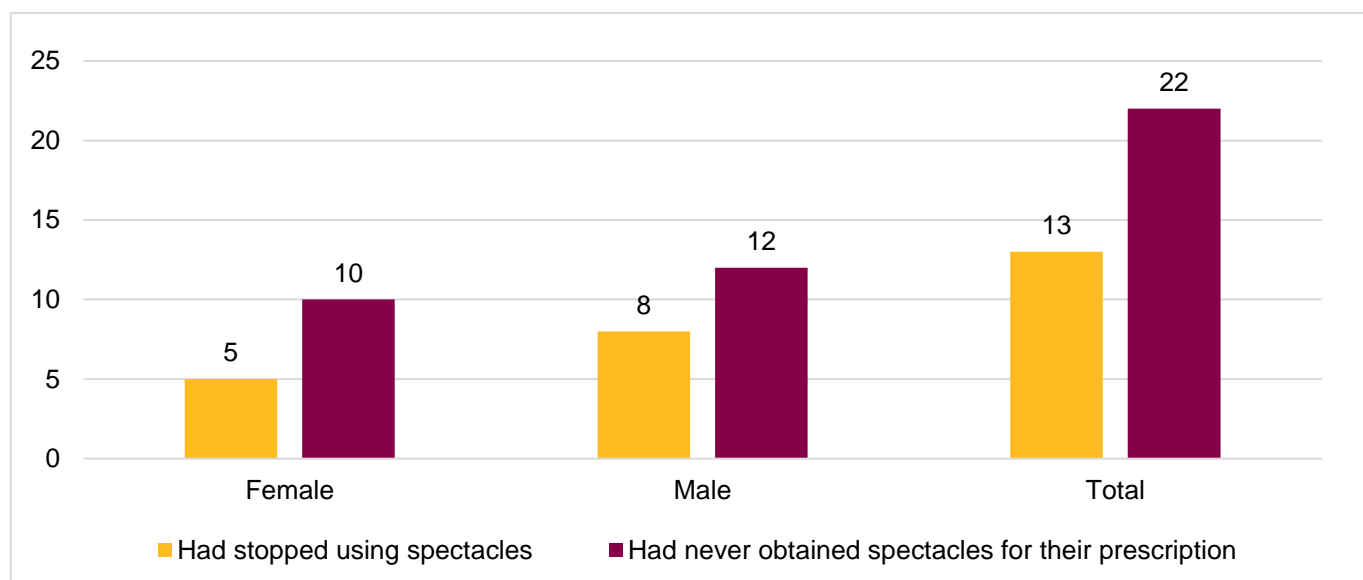


For 277 out of 370 adults with spectacles (75%), the pair of spectacles they had was their first pair, while 93 adults (25%) had used spectacles before.

Main reasons for not wearing spectacles among adults

Out of the 35 adults who were not using spectacles at the time of the survey, 22 respondents (10 female and 12 male) had stopped using spectacles, while 13 people had never obtained spectacles for their prescription (Figure 16).

Figure 16. Number of adults who had stopped using spectacles and who never obtained spectacles for their prescription



The main reasons for those who had stopped wearing spectacles were “spectacles broken or lost” (45.5%) and “uncomfortable to wear” (27.3%). Very few adults reported that they did not like the quality or style of their spectacles. Women were more likely to say that their glasses were lost or broken, while men were more likely to report feeling uncomfortable when wearing glasses (Table 8). Among the 22 adults who had stopped wearing spectacles, 19 had paid for their glasses and the average price was INR 360.

Table 8. Main reasons for stopping the use of spectacles

	Female N (%)	Male N (%)	Total N (%)
Can see well without glasses	0 0.0	2 16.7	2 9.1
Spectacles broken or lost	7 70.0	3 25.0	10 45.5
Uncomfortable to wear	1 10.0	5 41.7	6 27.3
Unable to replace the spectacles	0 0.0	1 8.3	1 4.5
Don't remember	1 10.0	1 8.3	2 9.1
Total	10	12	22

Some participants said that Vision Centres had to communicate more information to the patients on the importance of regular use and replacement of spectacles:

“Vision Centres should conduct awareness campaign on regular use of glasses.”
(IDI with female, aged 37 years)

Section III: Discussion

The study examined the compliance with wearing spectacles among adults and children who had been prescribed spectacles under the Sunderbans Eye Health Service Strengthening Project. The compliance for both children and adults was very high, with 91% of adults and 93% of children wearing spectacles 6-18 months after the prescription. There were no major gender differences in the compliance. However, adults were more likely to report using spectacles often, as prescribed by the doctor, while children were more likely to report using them occasionally. It is therefore important that both teachers and parents are educated about a need to monitor the regular use of spectacles by children.

The main reasons for not wearing spectacles among adults were broken/lost spectacles and feeling uncomfortable when using them. The main reason for children was dislike of wearing spectacles followed by broken/lost spectacles and feeling uncomfortable.

Adults who wore spectacles valued good quality and safety of the spectacles as priorities. For children, quality, safety, affordable price and attractive style were important.

The preferred place for vision check-ups for adults was Vision Centres, followed by camps. Children preferred outreach activities in schools/community, followed by Vision Centres. The finding suggests that school-based screening is an effective strategy to identify refractive errors and provide glasses to children. Furthermore, the study did not find any evidence of parental disapproval or stigma associated with wearing spectacles, although it was evident that liking or disliking spectacles and the style of spectacles was more important for children than adults. The finding suggests that communication campaigns involving popular images and role models are important to influence children's behaviours and counteract potential peer pressure.

Interestingly, among adults, we did not find any evidence of negative attitudes or stigma of women wearing spectacles often reported in the literature. The study did not distinguish between the use of spectacles for near and distance vision. Given that the mean age of participants was 52 years, it is possible that the majority of adult respondents had presbyopic spectacles used occasionally for near vision activities. Attitudes towards spectacles among younger women, who require continuous use of spectacles for distance, may be different.

The study has a number of limitations. Since the community mobilisers were working very closely with the community under this project, it is possible that the community and the schools had some prior information about the study, resulting in a very high compliance rate. Also, the compliance was measured by the presence of spectacles on the day of the survey and may not reflect actual usage. The findings need to be taken into account when planning other eye care projects aiming to reduce avoidable visual impairment among adults and children in India and other settings.