

**Operational Research Study on
“Compliance of Spectacle wears among School Children”**



VISION 2020: The Right to Sight - INDIA

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2009-10

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REPORT OF THE STUDY

PREFACE

ACKNOWLEDGEMENT

It is a matter of immense pleasure for us to be a part of this important activity. First of all, we thank Vision 2020: India, Right to Sight programme for approving this study and giving us the opportunity to co ordinate the study. We have received very good support from Mr. Anand Sudhan of Sadguru Netra Chikitsalaya, Chitrakoot in planning and implementing the study. All the reviewers have helped in improving the strength of the study, particularly Dr. GVS Murthy who helped in making it more scientific and bringing important issues to our notice. He has always sent answers to all our queries in time.

We thank all the partners in making this activity successful. The data collection through field work is a difficult job BUT all the partners have done their part of work sincerely. The teams had to visit the schools more than once if they could not get all the children's data in one visit still they have done in patiently. The coordinators at the partner hospitals have been made to work hard and their support was untiring. The supervisors from SEWA Rural and Shri Sadguru Netra Chikitsalaya took out time from their busy schedule to visit the partners and help bring uniformity in the study. Mr. Anand Sudhan has done all the hard work to do the analysis and prepare tables. The data entry operators at SEWA Rural and Sadguru Netra Chikitsalaya have done the hard work of data entry and have done it well.

Most importantly, we are thankful to all the children who have participated in the study, whose assistance has helped us, bring out important aspects of the activity to make it better in the future and also make the national programme more output oriented.

In the end, we thank the management of SEWA Rural to allow us co ordinate this study taking time out from the busy schedule and do the needful for this important work.

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Map of the Locations of the Study across the INDIA



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1. Background of the Study

Refractive errors are emerging as an important cause of visual impairment and low vision. Children with refractive errors need special attention because it hampers their psychological growth also along with leading to learning disabilities due to poor vision. It assumes greater importance as when it is very easy to correct it with the help of spectacles. Refraction can be done by the paramedical staff also and in that way also it is easy to manage the problem.

School eye screening is an important component of the National Programme for the control of blindness. All the stakeholders involved in school eye screening have been screening school children in good numbers for last many years. Provision of spectacles is an integral part of the activity. DBCS is providing spectacles free of cost to the children from primary section. The no. of spectacles distributed is quite big and it is increasing. 1.92 lacs teachers were trained in the year 2007-08 for school screening activity. Totally 272.22 lacs children were screened, of which, 11.03 lacs students were detected with refractive error and 4.92 lacs (44% of identified students) were provided with spectacles in the same year. However, recently even experts from ICEH, London have confirmed that there is no need to prescribe spectacles if the power of the spectacles required is less $< -0.75D$, $< +2.0D$ or $< 0.5 D$ astigmatism. We need to find out if prescribing spectacles for less the significant refractive error is also a reason for non compliance because the gut feeling is that when we prescribe with non significant refractive errors, the child is less likely to use the spectacles.

However, we do not have enough scientific data on the use of spectacles which we distribute. Whether kids are using them properly or not remains a question. At the same time, the kids need to undergo a yearly exam – a repeat refraction to check for any change in the power of glasses they are using. Whether this is happening or not also need to be reviewed because our efforts should be bringing about this behavioural change and should be raising the level of awareness to that extent. School eye screening under NPCB means a yearly examination is mandatory BUT we need to find out whether it is happening in reality or not.

Crude data which is available shows that the children do not use the spectacles which are provided – many reasons are quoted for the same.

1. Peer pressure – being called names etc.
2. Lack of acceptance of spectacles in the community and at home.
3. Same colour of the frame given to all the kids in the school giving an impression of “uniformity”?
4. Need for spectacles not felt – many times, the refractive power prescribed is small – children do not feel the need of it and do not use them. That is the reason why ICEH has suggested that we need not prescribe myopia less than 0.75 D, hypermetropia less than 2D and astigmatism less than 0.5D.
5. In rural area especially for girls it is believed that child with spectacles cannot get married easily.

6. Inappropriate refractive error services leading to wrong correction where in the child develops headache, watering etc.

Based on all these points, we have decided to undertake a compliance study (Ideally a study to understand the compliance of spectacle wear among children) of the children who were provided with the spectacles through school eye screening and address the above issues to collect data and come up with an analysis to throw more light on the existing status and guide us for future action.

2. Rationale for the Study

School eye screening is an important component of the National Programme for the control of blindness. We have been screening school children in good numbers for last many years. Provision of spectacles is an integral part of the activity. DBCS is providing spectacles free of cost to the children from primary section. The no. of spectacles distributed is quite big and it is increasing.

When we were receiving the feedback that the school screening activity in our organization was not yielding refractive errors comparable to the national figures, we were always perplexed by the possibility that we may not be doing the activity correctly. When we looked at the statistics from published data, it became evident that the figures were different in rural areas. On a second occasion when an evaluation of our work was carried out, it came out that the children were not using glasses after being given. The reasons were many BUT the most important was the same type of frame that we were giving. The peer pressure was playing against them. Further investigation showed that more than 50% of those with high degree of refractive errors were already using spectacles at the time of school screening where as those with small refractive errors who were not so much handicapped by their refractive status, tended not to use the spectacles after being given a pair of spectacles. A review of the national programme confirmed that we are using 6/9 as cut off for the visual impairment during preliminary examination. Review of literature also showed that the prevalence of refractive error was much less in primary school children as compared to the secondary school children. Further examination in primary school children is more demanding and difficult. It requires specialized skills also. Final hammering came from ICEH London also saying that there is a) No need for screening primary school children. b) Visual acuity cut off of 6/12 or even 6/18 can be used. c) There is no need to prescribe refractive errors of <-0.75 D, $<+2$ D and astigmatism of <1 D.

With all this information available, we were thinking how to go about the whole issue to help the national programme. Sightsavers International also started planning seriously on conducting a national survey to go into the details of this. At that time, the suggestion came from Vision 2020 programme to send topics for OR study to be funded by Orbis International. Since, much greater funds go towards provision of spectacles after being prescribed; we thought an operational research study on compliance to spectacle wear can tell us a lot to improve the status of spectacle wear after being prescribed. And that is how this study was decided.

However, we do not have enough scientific data on the use of spectacles which we distribute. Whether kids are using them properly or not remains a question. At the same time, the kids need to undergo a yearly exam – a repeat refraction to check for any change in the power of glasses they are using. Whether this is happening or not

also need to be reviewed because our efforts should be bringing about this behavioral change and should be raising the level of awareness to that extent.

Crude data which is available shows that the children do not use the spectacles which are provided

We wanted to gather information to reflect on following parameters

- ✚ Whether parent's education, occupation or economic status has any effect on compliance
- ✚ Whether there was any delay in provision of the spectacles to the child after examination or not (Many times, delay itself averse the child from using spectacles). If there is delay – may be it can be corrected also.
- ✚ If the child is not using the spectacles – the reasons there of. This can throw more light on what can be done as corrective measure to improve the compliance.
- ✚ Whether the child is aware about the spectacle power and the need for regular yearly eye examination or not. This will tell us if our efforts at IEC activities are enough or further action is needed.
- ✚ Whether we are prescribing for less than significant refractive errors or not. If our efforts are being directed towards non significant refractive errors also, may be as national programme, NPCB can issue directive not to prescribe for non significant refractive errors which can save lot of time, energy and resources which are scant in our country.
- ✚ Whether the type of frame and the fitting job was done properly or not. If this is not done properly, we may need to focus on the providers to improve the quality of the work done. At some places, it is seen that the children were given adult frames or all the children in same school received similar frames which were the reason for non compliance.

3. Objectives

In nut shell, we want to generate data to tell us the reasons for non compliance, the awareness level of the child & family and if non significant refractive errors are also being prescribed or not. The answers to the parameters indicated here will be available from the analysis of the data generated from all the partners and will throw light on what modifications are required in the school eye screening programme to improve the compliance level.

4. Methodology

Methodology used is –involvement of Vision 2020: The Right to Sight – INDIA member organizations spread across the country in all the regions, ensuring equal distribution of rural and urban children to collect the data and thus participated in this research study.

We have collected data of minimum 200 kids from each partner organization, involving 6 partner organizations. We conducted the study instrument in 6 select institutions (based on geographical distribution, local challenges and interest of the organization to get involved in the study).

To make sure that all of the partner institutions collect the data in the same manner, a guideline was developed which was shared with all of them. All were instructed to follow the guidelines verbatim and capture the data nicely.

For doing this work, a data collection format was prepared and sent across to all the partners. Each organization selected one or two Ophthalmic Assistants for the data collection. The selected Ophthalmic assistants were requested do a good sincere job of data collection. In case of any queries, they were requested to contact the coordinator for clarification.

Each organization was asked to translate the format and questionnaire in to local language.

When the actual data collection was done at each place, one supervisor from either SEWA Rural or SNC visited the organization on the first day of data collection so that the data collection remains uniform and there were no ambiguities. As such, the data collection methods were discussed during the meeting at Patna during the AGBM also.

- ❑ Questionnaire was administered by Ophthalmic Assistant / Vision Technician to school going children of age group 10 -14 years (class 5 to 9). The supervisor and in charge of the study at each location made sure that the OA / VT collected data carefully.
- ❑ The OA who was involved in doing refraction in the school screening programme were not involved in data collection. Another OA was employed to do this work.
- ❑ The work of OA / VT was supervised and verified at the next level. Ensuring that data was collected, if possible, at a single visit.
- ❑ Before trying to collect data, a complete list of schools with the distance from the hospital was sent to the coordinator. The coordinator randomly selected schools to be included in the study and sent the list of selected schools back to each partner.

Following instructions were given to the partner organizations for filling up the questionnaire.

- Once a school is selected, include all the students who were refracted and provided with spectacles at any point in time in the study whether they are using the spectacles at this moment or not, whether they have brought their spectacles to the school or not.
- We will collect data only in the school since field visits will be time consuming.
- The data will be collected from the student directly. A few fields will be filled up by observing the student by the OA.
- You will need to translate the guideline and the data format into your local language for the OA to use it comfortably.
- Tick mark in the box where provided otherwise circle the correct choice.
- If students are not wearing their spectacles, ask them whether they brought their spectacles to school and, if so, ask them to show them to you. It may so happen that the student is not wearing the spectacles on the day of your visit – we will include all the kids who were prescribed glasses at some point in time. Whether the glasses are worn on the day of the visit is immaterial. On the day of the visit, if the glasses are not worn, mark as option 3 – Spectacles are available at home but not worn in school.
- In the observation box, please write down – 1 to 4 depending on which is applicable to the particular student being interviewed.
- Q.1, 2,3,4,5 - Please write student's name, name of the school, address, age, sex etc. in capital – so that it remains easily legible.
- Q.6 - Distance of child's residence from the place of distribution of spectacles – please circle the one which is appropriate - 5 km / 10 km / 15 km / 20 km. If the student has obtained glasses more than once, we will consider the details of the last spectacles procured.
- Q.7 - Source of spectacles – again please circle one which is appropriate - Base Hospital / Outreach / Vision Centre / DBCS / Other
- Q.8 - How much time did you use it in a day – Please circle the option which is appropriate as per the child - 1-2 hours / 2-4 hours / 4-6 hours / 6-8 hours / Whole day
- Q. 9 - For how long did you use it - Please circle the option which is appropriate as per the child - 1-2 months / 2-4 months / 4-6 months / One year / Longer
- Q. 10 - Do you use it regularly – The child should be using it on a daily basis for minimum 6-8 hours of the day. Here record the answer only in yes or no. Let the child tell you first; don't ask leading questions to begin with. Only if you can't elicit any response from the child, you give indirect hints. If the answer to the questions 10 is no, answer to questions 11-12-13 will be no only.
- Q.11 - Did you get new spectacles again – Here we want to know if the child got another pair of glasses in subsequent years or not – please record the finding as yes or no.

- ❑ If the answer is yes, then find out the source - Base Hospital / Outreach / Vision Centre / DBCS / Other
 - ❑ Q.12 - Do you have advantage of wearing glasses – Record the subjective feeling of the child as yes or no
 - ❑ If the answer to the previous question is yes – then ask what is the advantage and record as - Able to see clearly / Clear Vision / Relieved from Head ache / Relieved from Watering / No change / Others (specify):
-
- ❑ Q.13 - Do you like the frame you wear – Record the subjective feeling of the child as yes or no.
 - ❑ If the child says no – please ask for the reasons and record the same here.
 - ❑ Q.14 - Where do you go for eye check up – Please circle one option that is most appropriate - Govt. hospital / NGO / private / Optical shop / Other
 - ❑ Q.15 to Q.19 – You can not capture this data if the child has not brought the glasses to the school
 - ❑ Q.15 - Type of frame worn by child (to be captured by OA) – This you have to capture yourself by observing the type of frame worn by the child whether adult or paediatric.
 - ❑ Q.16 - Quality of the fitting work done - This you have to capture yourself by observing the type of fitting and circle one option which you feel is the most appropriate - Excellent / Good / Acceptable / Poor
 - ❑ Q.17 - Power of the spectacles – You will need to carry a – 0.75 D trial lens with you and check the spectacle against it to find out if the power of the child' spectacle is $\leq - 0.75D$.
 - ❑ Q. 18 – Quality of the glasses also has to be recorded. Particularly the clarity of the glass and the scratches etc. if present should be recorded as appropriate - Excellent / Good / Acceptable / Poor
 - ❑ Q.19 – Visual acuity in worse eye with spectacles is to be recorded. You will need to carry Snellen chart with you for this purpose.
 - ❑ There may be more then one answer to several questions in the form. Please tick mark all the answers given to you.
 - ❑ In the last box at the end – please write your name, your organisation's name and the date of data collection.
 - ❑ Please relook at each form after you fill it up completely for completeness and also at the end of the day before leaving the school for completeness. If any column is found blank, you will need to go back to the child and collect the missing data.

5. Observations

During the pilot study at Vivekananda mission Ashram Hospital in Chaitanyapur, West Bengal, it was observed that students did not receive spectacles after being refracted in many schools.

One school administration did not agree to allow the team from Khairabad Eye Hospital to conduct the study in their school. Indicates apathy of the school administrations and also the fact that it is not possible to get the co operation from the school administrations everywhere.

As per the observation made by Alakhnayan Mandir eye hospital team, 90% children with earlier glass prescriptions are not using glasses. SEWA Rural team also noted the same finding.

Alakhnayan mandir eye hospital did not get 200 kids using spectacles from first three sets of seven schools selected randomly. The reason was all the schools in the area have not been screened in the state of Rajasthan. This just goes to show that the school screening activity is not occurring through out the state in Rajasthan. This is in an area where a big NGO like Alakhnayan Mandir eye hospital is located and the tehsil is including the city of Udaipur. One starts wondering what must be the status in more interior rural areas.

Sewa Rural team also did not find 200 kids from first set of seven randomly selected schools. This happened because the selected schools were all small ones with total student strength in the range of 150 approximately. Second set of seven schools then yielded the necessary number of total 200 kids.

Khairabad Eye hospital team also found only 41 kids wearing spectacles in the first set of seven schools selected.

Somehow, school screening coverage is not 100% in any of the area served by the partner hospitals. All players in the area put to gather are not covering 100% schools. That is the reason why most of the partners found very few children in those schools which are not covered by them directly.

Table: 1 - No. of children examined at partner hospitals

Partner organization	No. of schools visited	Total No. of children in the school	No. of children enrolled in the survey
SEWA Rural	17	7525	187
SNC Chitrakoot	81	19826	217
VMA, West Bengal	19	6950	208
Lions NAB, Miraj	16	12862	204
Alakh Nayan Mandir, Udaipur	29	4852	166
KEH, Kanpur	8	1959	208
TOTAL	168	52015	982

Initially, six partner hospitals had joined the survey activity. The data from KEH came in very late and it had serious inconsistencies including the fact that they had surveyed only those children who were wearing spectacles & also many data fields were left blank leaving the data useless for analysis and so we had to omit the data from KEH from the analysis. There were 982 records from other five partners which were used for data analysis. After data verification, 971 records were found to be useful for the data analysis and hence the analysis has 971 records analysed. The total no. of useful records from different partners is shown in the table below.

From the table 1, it is seen that we had to go to more than 52015 students to get a sample of 982 students who were prescribed spectacles at some point of time. Which is merely 2.17% of the total students surveyed. This is much less than the national average of 7% school children wearing spectacles. This sample actually belongs to secondary school children where we should find more refractive errors.

Table 2: Organization collecting data

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
ANMEI	155	16.0	16.0	16.0
Lions Nab Eye Hospital, Miraj	204	21.0	21.0	37.0
SEWA Rural, Jhagadia	187	19.3	19.3	56.3
SNC CHITRAKOOT	217	22.3	22.3	78.6
VMA-NNN	208	21.4	21.4	100.0
Total	971	100.0	100.0	100.0

The share of records was maximum from SNC Chitrakoot 22.3% and minimum from Alakhnayan Mandir Eye hospital – 16%. However, SNC Chitrakoot had to visit more than 19000 students to get this sample size of 217. Merely 1.1% students were found who were prescribed spectacles at some point of time.

Table 3: Observation Student

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Is wearing spectacles	289	29.8	29.8	29.8
Is not wearing spectacles, but has brought them to school	34	3.5	3.5	33.3
Is not wearing spectacles, but has them at home	307	31.6	31.6	64.9
Does not have spectacles	340	35.0	35.1	100.0
Total	970	99.9	100.0	
Missing				
System	1	.1		
Total	971	100.0		

35% of the students have lost their spectacles for one or the other reason and have not gone for getting new pair of spectacles till date indicates that they are not interested in wearing spectacles. Only 29.8% students were wearing spectacles at the time of examination. This indicates poor utilization of the services offered under school eye examination programme.

Table 4: Gender of the child

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Boys	481	49.5	49.5
	Girls	488	50.3	99.8
	Missing	2	.2	100.0
	Total	971	100.0	

Boys and girls are almost equal in numbers. Indicates there is no gender related difference in prescription of spectacles.

Table 5: How long is being used

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-2 months	98	10.1	12.7
	2-4 months	103	10.6	26.0
	4-6 months	97	10.0	38.6
	1 Year	272	28.0	73.8
	Longer	201	20.7	99.9
	Missing	1	.1	100.0
	Total	772	79.5	
Missing	System	199	20.5	
	Total	971	100.0	

About 60% students are using glasses for a year or longer.

Table 6: Distance-Distribution place

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5 Km	411	42.3	48.9	48.9
	10 Km	194	20.0	23.1	71.9
	15 Km	78	8.0	9.3	81.2
	20 Km	158	16.3	18.8	100.0
	Total	841	86.6	100.0	
Missing	System	130	13.4		
	Total	971	100.0		

62% of the students are residing within 10 km distance of the distribution place. Only 16.3% of the students are residing about 20 kms away from the place of distribution.

Table 7: Age-group distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-9	11	1.1	1.1	1.1
	10-12	396	40.8	41.3	42.5
	13-14	472	48.6	49.3	91.8
	15-16	79	8.1	8.2	100.0
	Total	958	98.7	100.0	
Missing	System	13	1.3		
	Total	971	100.0		

Students from secondary schools were enrolled in the survey and so the age group is from 10 to 16.

Table 8: Source of spectacles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Base Hospital	320	33.0	40.6	40.6
	Outreach	125	12.9	15.9	56.5
	Vision Centre	61	6.3	7.7	64.2
	DBCS	217	22.3	27.5	91.8
	Other source	65	6.7	8.2	100.0
	Total	788	81.2	100.0	
Missing	System	183	18.8		
	Total	971	100.0		

33% students got their spectacles from base hospitals – i.e. self motivated to go for eye check ups. 12.9% students received their spectacles from outreach activities. DBCS was the source of supply in only about 22.3% of the cases indicating less priority among the community.

Table 9: Usage time per day

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		229	21.0	21.0	21.0
	1-2 hours	197	18.1	18.1	39.2
	2-4 hours	188	17.3	17.3	56.4
	4-6 hours	88	8.1	8.1	64.5
	6-8 hours	82	7.5	7.5	72.1
	Whole day	304	27.9	27.9	100.0
Total	1088	100.0	100.0		

Only 27.9% students are using their spectacles for the whole day. 35% students are using it for less than 4 hours of the day.

Table 10: Regularity of usage

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	306	31.5	34.2	34.2
	No	590	60.8	65.8	100.0
	Total	896	92.3	100.0	
Missing	System	75	7.7		
	Total	971	100.0		

60.8% students denied a regular use of their spectacles on asking a direct question.

15 different options were given to students to choose from for non use of spectacles and multiple responses were allowed. Non availability of spectacles after procurement for one or the other reason was found as a response 208 times (84 responses each of lost spectacles and broken glasses with 40 responses of broken frames). 150 responses of being shy for one or the other reason (59 responses of friends calling names, 36 responses of relatives teasing, 23 responses of parents not allowing and 32 responses of dislike for spectacles) were noted. 135 responses of one or the other minor problem related to wearing of spectacles (76 responses of being uncomfortable, 31 responses of headache and 28 responses of watering) were noted. 62 responses of no need for spectacles, 48 responses of no reason for non use, 16 responses of wrong prescription and 22 responses of occasional use were also noted. Where as in 3 responses other reasons were quoted.

Table 11: Got new spectacles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	213	21.9	23.7	23.7
	No	687	70.8	76.3	100.0
	Total	900	92.7	100.0	
Missing	System	71	7.3		
	Total	971	100.0		

Only 21.9% students have got a repeat examination done and gone for new pair of spectacles.

Table 12: Source of new spectacles

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	781	80.4	80.4	80.4
Base Hospital	129	13.3	13.3	93.7
Outreach	17	1.8	1.8	95.5
Vision Centre	12	1.2	1.2	96.7
DBCS	13	1.3	1.3	98.0
Other Source	19	2.0	2.0	100.0
Total	971	100.0	100.0	

Of the 190 students who have gone for new pair of spectacles, 67.9% of the students have gone to base hospitals – self motivated lot. Only 6.8% students have received their new pair of spectacles from DBCS.

Table 13: Advantage of wearing spectacles

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Yes	535	55.1	60.1	60.1
No	355	36.6	39.9	100.0
Total	890	91.7	100.0	
Missing				
System	81	8.3		
Total	971	100.0		

60.1% of the students said that they felt some advantage in wearing the spectacles. A sub question to assess what advantage was perceived, revealed that 449 students felt that they could see better, 184 students felt that they were relieved of symptoms like headache and watering. Where as 2 responses were noted saying they felt no change.

Table 14: Whether they Like the frame they are Wearing or not

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Yes	524	54.0	61.4	61.4
No	330	34.0	38.6	100.0
Total	854	88.0	100.0	
Missing				
System	117	12.0		
Total	971	100.0		

61.4% of the students said that they like the frame that they are wearing.

Among those who said they did not like the frame – reasons given were either the frame was small (30 responses) or big (62 responses) or heavy (5 responses) or loose fitting (3 responses) or they were not comfortable for some reason (62 responses). Some students said they did not like the frame (18 responses), it was bad looking (5 responses) or the colour was bad (5 responses). 25 students said they had their spectacles broken and 5 students had lost their spectacles.

Table 15: Place of eye check-up

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Govt. Hospital	110	11.3	11.3	11.3
NGO	242	24.9	24.9	36.3
Private	374	38.5	38.5	74.8
Optical Shop	127	13.1	13.1	87.8
Other source	64	6.6	6.6	94.4
Total	54	5.6	5.6	100.0
Total	971	100.0	100.0	

24.9% students said they had gone to Govt. hospital for the examination where as 38.5% students had gone to NGO hospitals. Only about 13.1% students got their eyes examined at Private hospitals.

Table 16: type of frame worn by child

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Adult	78	8.0	24.8	24.8
	Pediatric	237	24.4	75.2	100.0
	Total	315	32.4	100.0	
Missing	System	656	67.6		
	Total	971	100.0		

78 students – 24.8% students of the total 315 students wearing spectacles were found to be wearing adult frames. The rest of the 75.2% students were wearing paediatric frames.

Table 17: Quality of fitting work done

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	99	10.2	31.3	31.3
	Good	162	16.7	51.3	82.6
	Acceptable	53	5.5	16.8	99.4
	Poor	2	.2	.6	100.0
	Total	316	32.5	100.0	
Missing	System	655	67.5		
	Total	971	100.0		

Quality of fitting was poor in very rare circumstances – only 0.6% students were having spectacles where the fitting work was poor in quality. It was excellent in 31.3%, good in 51.3% and acceptable in 16.8% students.

Table 18: Quality of glasses

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	106	10.9	33.5	33.5
	Good	150	15.4	47.5	81.0
	Acceptable	57	5.9	18.0	99.1
	Poor	3	.3	.9	100.0
	Total	316	32.5	100.0	
Missing	System	655	67.5		
	Total	971	100.0		

Quality of glass was poor in only 0.9% of the total students. It was excellent in 33.5%, good in 47.5% and acceptable in 18% students.

Table 19: Power of spectacles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		655	67.5	67.5	67.5
	<0.75D	108	11.1	11.1	78.6
	More	208	21.4	21.4	100.0
	Total	971	100.0	100.0	

Of the 316 students wearing spectacles at the time of interview, 34.2% students were wearing spectacles with dioptric power < 0.75 D.

Table 20: Visual acuity of worst eye

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	6/6	175	18.0	56.8	56.8
	6/9-6/18	111	11.4	36.0	92.9
	6/24-6/60	20	2.1	6.5	99.4
	<6/60	2	.2	.6	100.0
	Total	308	31.7	100.0	
Missing	System	663	68.3		
	Total	971	100.0		

56.8% students of the total 308 students wearing spectacles had normal vision in both eyes. Another 36.0% (total 92.9%) had no visual impairment. 7.1% students had severe visual impairment and among them, 0.6% (2 students) were economically blind in the worst eye.

Table 21: Gender of the child * How long is being used Cross Tabulation

		How long is being used				
		1-2 months	2-4 months	4-6 months	1 Year	Longer
Gender of the child	Boys	46	53	50	141	113
	Girls	52	49	47	130	88
	Missing	0	1	0	1	0
	Total	98	103	97	272	201

No statistically significant difference was found genderwise in the usage of spectacles over long period of time.

Table 22: Source of spectacles * Did we use regularly Cross Tabulation

		Did we use regularly		Total
		Yes	No	
Source of spectacles	Base Hospital	152	167	319
	Outreach	38	85	123
	Vision Centre	23	38	61
	DBCS	55	162	217
	Other source	32	33	65
	Total	300	485	785

A statistically significant difference in usage was found against the place of procurement. When the spectacles were procured from the base hospital, the likelihood of being used regularly were quite high -47.6% and vice versa for the procurement from DBCS where the likelihood of using it regularly was only 25.3%. These are the two major providers. For vision centres, the likelihood of utilization was 37% and for outreach it was 30%.

Table 23: Power of spectacles * Did we use regularly Cross Tabulation

		Did we use regularly		Total
		Yes	No	
Power of spectacles		43	537	580
	<0.75D	85	23	108
	More	178	30	208
	Total	306	590	896

If the power of spectacles is less than 0.75D, the chances of the same being used regularly are 78.7%. However if the power is more than 0.75D, the chances of the same being used regularly are 85.6%.

Table 24: Power of spectacles * Usage time per day Cross Tabulation

		Usage time per day						TOTAL
			1-2 hours	2-4 hours	4-6 hours	6-8 hours	Whole day	
Power of spectacles		171	121	122	50	47	144	655
	<0.75D	14	23	24	9	12	26	108
	More	43	45	28	16	10	66	208
	Total	228	189	174	75	69	236	971

If the power of the spectacles is less than 0.75D, the chances of the same being used for the whole day are 24.1%. Whereas if the power is more than 0.75D, the chances of being used for the whole day are 31.7%.

Table 25: Gender of the child * Power of spectacles Cross Tabulation

		Power of spectacles			Total
			<0.75D	More	
Gender of the child	Boys	316	55	110	481
	Girls	338	52	98	488
	Missing	1	1	0	2
	Total	655	108	208	971

No statistically significant difference in power of spectacles was found against gender.

Table 26: How long is being used * Power of spectacles Cross Tabulation

		Power of spectacles			Total
		<0.75D	More		
How long is being used	1-2 months	70	17	11	98
	2-4 months	80	8	15	103
	4-6 months	64	17	16	97
	1 Year	164	48	60	272
	Longer	81	18	102	201
	Missing	1	0	0	1
	Total	460	108	204	772

50% of the students with power greater than 0.75D were using it for longer than one year where as only 16.7% students with <0.75D power doing the same.

Table 27: Source of spectacles * Like frame Wear Cross Tabulation

		Like frame Wear		Total
		Yes	No	
Source of spectacles	Base Hospital	226	79	305
	Outreach	86	33	119
	Vision Centre	28	33	61
	DBCS	90	119	209
	Other source	56	6	62
	Total	486	270	756

When the spectacles were procured from base hospital - 74.1%, from outreach – 72.3%, from vision centre – 45.9% and from DBCS – 43.1% students liked the frame.

6. Results and Discussion

All children who were refracted under the school screening programme have not received spectacles.

Coverage of school screening activity is not 100% in majority of the areas.

Sensitivity of the school administration and teachers is not uniform – occasionally, they don't allow school eye screening etc.

Over all percentage of children who are prescribed spectacles at some point of time in school screening activity was found to be 2.17% (only corrected students included – however all the children are supposed to be corrected) against the national average of 7%. Since there were partners from all parts of the country except South India, the percentage of school children having refractive errors need to be reviewed. This study was conducted on secondary school children only where actually we should expect more refractive errors.

Only 30% students were found wearing spectacles at the time of survey among the total students who were prescribed spectacles. So 70% of the time, energy and efforts spent behind school screening activity go waste.

No difference in prevalence of refractive errors found genderwise.

Only 25% (one in four) students have been examined in Govt. set up and have received their spectacles from DBCS. 40% (two out of five) students have received their spectacles from base hospitals. DBCS is supposed to be providing spectacles free to the students in primary schools (upto 7th standard – now upto 8th standard). Majority of the students in need of spectacles are found in secondary schools. 40% students going to base hospital shows the level of awareness among parents and students.

Only 28% students use the spectacles for the whole day and only 31% of the students using spectacles regularly also indicate that the resources spent behind this activity are not put to proper use.

22% students have gone for a repeat examination to get new pair of spectacles. Of these, 68% students have gone to the base hospital for new pair of glasses. This

shows that those who are motivated enough to go for a regular eye check up and get new pair of spectacles are going to the base hospitals rather than waiting for the school screening activity.

Nearly 40% students upon questioning told that they did not find any advantage in wearing their spectacles.

39% students said that they did not like the frames they were wearing. The reasons given were either the frame was uncomfortable, big-small-heavy-colour not good etc. We need to give preferences to the children in selection of frames. This has been realized in many parts and now children are being given preferences. 8% students were wearing adult frames. This should not happen at all. However, the fitting work & quality of glasses was found to be good in almost 100% cases. Likelihood of the frame being liked was much more with spectacles procured from base hospital & outreach – 75% against those procured from DBCS – 43.1%.

Of the total students wearing spectacles at the time of survey, 34% students were using spectacles with dioptric power $<0.75D$. This is non significant refractive errors and the National programme need not spend on provision of these spectacles.

No statistically significant difference was found genderwise in the usage of spectacles over long period of time.

When the spectacles were procured from the base hospital, the likelihood of being used regularly were quite high -47.6% and vice versa for the procurement from DBCS where the likelihood of using it regularly was only 25.3%. When the power of the spectacles is more than 0.75D, the chances of the same being used regularly are higher by 10% and similarly if the power is more, chances of being worn for the whole day are also 8% more and also if the power is greater than 0.75D, the chance of being used longer than one year is more by 30%.

Conclusion

- School screening is not occurring in 100% schools.
- Prevalence rate of refractive error (What we reported is Corrected and we didn't look at uncorrected- Overall prevalence includes both – however all the children in these schools are supposed to be corrected) among secondary schools turned out to be 2.17% against the national average of 7%.
- Utilisation of spectacles after provision is only 30%. There is lot of time, energy and efforts going to waste in this activity.
- Very few students are using the spectacles for the whole day or for prolonged period of time. If the power of the spectacles is greater than 0.75D, the chances of being used for longer than one year are much higher.
- Very few students are going for re examination and for procuring new pair of glasses.
- There is a clear preference for the base hospital among students and parents. DBCS is the mode of supply in only 25% of the cases.
- Two out of five students said that they did not like the frame and so this aspect needs to be looked into details to make sure that the frames are attractive and children use them. DBCS frames are not liked as compared to base hospital and outreach.
- 35% (one third) students were using spectacles with dioptric value less than 0.75D which is non significant refractive error and need not be prescribed.
- 8% students were wearing adult frames. This should not happen under any circumstances.

The conclusion that can be drawn from the activity is:

Non significant refractive errors are still being prescribed which should stop. Adult frames are still given to the children that should not happen.

We should relook at the activity to make sure that the spectacles are used regularly after being provided. Children should be given option to select frames of their choice. Quality of work being done under DBCS needs review. There is a clear preference for base hospital.

8. Annexure

VISION 2020: The Right to Sight – INDIA Operations Research Study on “Compliance of Spectacle wear among School Children”

QUESTIONNAIRE

Questionnaire

Note: Questionnaire to be administered by Ophthalmic Assistant / Vision Technician to school going children of age group 10 -14 years (class 5 to 9)

[If students are not wearing their spectacles, ask them whether they brought their spectacles to school and, if so, ask them to show them to you.]

<i>Observation:</i> Student	is wearing spectacles=1 is not wearing spectacles, but has brought them to school=2 is not wearing spectacles, but has them at home=3 does not have spectacles=4	<input type="checkbox"/>
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1. Name of Student:.....

2. Name of School:.....

3. Address:.....

4. Age: 5. Sex: Male Female

6. Distance of child's residence from place of distribution of spectacles

5 km 10 km 15 km 20 km

7. Source of the spectacles

Base Hospital Outreach Vision Centre DBCS
Other

8. How much time did you use it in a day?

1-2 hours 2-4 hours 4-6 hours 6-8 hours whole day

9. For how long did you use it?

1-2 months 2-4 months 4-6 months One year Longer

10. Do you use it regularly? Yes No

If no, reasons there of

Not feeling comfortable	<input type="checkbox"/>	Disliking spectacles	<input type="checkbox"/>	Prescription incorrect	<input type="checkbox"/>
Friends	<input type="checkbox"/>	Relatives teasing	<input type="checkbox"/>	Parents not allowing	<input type="checkbox"/>
Frame Broken	<input type="checkbox"/>	Glass Broken	<input type="checkbox"/>	Headache	<input type="checkbox"/>
Watering	<input type="checkbox"/>	Lost spectacles	<input type="checkbox"/>	Using occasionally	<input type="checkbox"/>
Don't feel glasses are needed	<input type="checkbox"/>	No reasons	<input type="checkbox"/>		
Other cause (Specify) _____					

11. Did you get new spectacles again? Yes No

If yes, where? Base Hospital Outreach Vision Centre DBCS Other

12. Do you have advantage of wearing glasses? Yes No

If yes, what?

Able to see clearly Clear Vision Relieved from Headache
Relieved from Watering *No change* Others (specify): _____

13. Do you like the frame you wear? Yes No

If no, why? _____

14. Where do you go for eye check up?

Govt. hospital NGO private Optical shop Other

15. Type of frame worn by child (to be captured by OA): Adult Paediatric

16. Quality of the fitting work done

Excellent Good Acceptable Poor

17. Quality of the glasses

Excellent Good Acceptable Poor

18. Power of the spectacles <0.75 D more

19. Visual acuity with the using glass in worse eye

6/6 6/9 to 6/18 6/24 to 6/60 <6/60

Name of the person filling up the form: _____

Name of the Organisation collecting Data: _____

Date: _____