

Original Research Article

Spectacle compliance amongst school children of Rohtak, Haryana, India

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ABSTRACT

Background: Refractive errors are the commonest cause of visual impairment in school children worldwide. They can be easily corrected by a pair of spectacles, only when they are used regularly. The purpose of present study is to document the actual rate of spectacle wear at the time of examination, assess principle determinants of spectacle wear and reasons for non-compliance among different demographic groups.

Methods: 200 school children in the age group of 6-15 years with refractive errors were selected. The schools were visited without prior intimation to the students 3 months after the initial examination. Reasons for spectacle wear non-compliance were enquired.

Results: 78 (39.0%) children out of 200 were compliant to spectacle wear, while 122 (61.0%) were non-compliant to spectacle wear. Main reason for not wearing spectacles was 'teased about the appearance with spectacles'.

Conclusions: School teachers should explain the risk of non-wearing of spectacles and benefits of spectacle wearing to both children and their parents. Most of the children were not compliant because they were teased about, did not like, or were not comfortable in their spectacles- all societal issues that could and should be addressed.

Keywords: Refractive errors, Spectacles, Compliance, School children

INTRODUCTION

Refractive errors are the commonest cause of visual impairment in school children worldwide, including India, China, Chile, and Nepal.¹⁻⁵ They can be easily corrected by a pair of spectacles, only when they are used regularly. WHO launched a global initiative 'VISION 2020: The Right to Sight' to combat the gigantic problem of blindness in the world.⁶ Screening and correction of refractive errors are one of the main priorities in WHO's initiative. Hence it is necessary to remove any obstacle in the use of spectacles. Few studies have been published in different parts of the world regarding compliance of spectacles but the results were disappointing as the proportion of children who were prescribed spectacles

but did not wear them was found to be high.⁷⁻¹¹ Very few articles are published in India focusing on reasons of non-compliance of spectacles.¹² The purpose of present study is to document the actual rate of spectacle wear at the time of examination, assess principle determinants of spectacle wear and reasons for non-compliance among different demographic groups.

METHODS

This study was conducted in the schools of Rohtak and surrounding districts. The study was approved by ethical committee of Pt. B. D. Sharma, PGIMS, Rohtak, Haryana, India. Written informed consent from the

principals of the schools and assent of the children were taken. Children of 6-15 years of age group were selected for the study. Initially, details regarding the project were communicated to principal/ Head of the schools. A classroom with good lighting was chosen in each school. Visual acuity of each eye was measured at 6 meters separately. The test distance was measured using a measuring tape. The Snellen's charts were hung on the wall and students were asked to read the letters on the chart. Snellen's chart in both English and Hindi were used based on the student's preference. The vision was tested with and without pinhole. The details of the students with poor vision and improvement with pinhole were recorded in a separate register. All the children with defective vision were referred to PGIMS, Rohtak, Haryana, India. Teachers of the schools were asked to ensure that children reported to PGIMS and get their refractive errors corrected. The optometrist performed

retinoscopy separately for each eye and prescribed the required correction. It was ensured that all children got their spectacles. Advantages of using the spectacles and disadvantages of not using them were explained to the children and their parents. The schools were visited without prior intimation to the students 3 months after the initial examination. Children not wearing the spectacles were questioned about the whereabouts of spectacle and were asked the reasons for not wearing them. Other information like age, gender, parental use of spectacles was noted from the previous records. Parental education and occupation were re-confirmed from the teachers. At the end of the study, the data was collected and analyzed by using chi-square test. A p value of <0.05 was considered significant.

RESULTS

Table 1: Association of demographic factors and non-compliance of spectacle wear.

Parameters	Compliant (n=78)		Non-compliant (n=122)		Total (n=200)	P value
	No.	%	No.	%	No.	
Gender						
Boys	49	42.2	67	57.8	116	p=0.269
Girls	29	34.5	55	65.5	84	
Age						
6-9 years	24	46.2	28	53.8	52	p=0.077
10-12 years	38	42.7	51	57.3	89	
13-15 years	16	27.1	43	72.9	59	
Father's education						
Illiterate	0	0	1	100	1	p=0.211
Primary	9	23.1	30	76.9	39	
Secondary	20	37.7	33	62.3	53	
Higher secondary	10	41.7	14	58.3	24	
Graduate	38	46.9	43	53.1	81	
Postgraduate	1	50	1	50	2	
Mother's education						
Illiterate	1	12.5	7	50	8	p=0.032
Primary	16	34.0	31	37.83	47	
Secondary	16	28.6	40	89.28	46	
Higher secondary	29	49.2	30	44.23	59	
Graduate	16	53.3	14	65.95	30	
Postgraduate	0	0	0	0	0	
Father's occupation						
Employee	36	45.0	44	55.0	80	p=0.018
Self-employed	16	36.4	28	63.6	44	
Farmer	15	30.6	34	69.4	49	
Laborer	6	27.3	16	72.7	22	
Teacher	5	100	0	0	5	
Mother's occupation						
Employee	7	43.8	9	56.3	16	p=0.01
Housewife	66	36.9	113	63.1	179	
Teacher	5	100	0	0	5	
Parent's using specs						
Yes	40	53.3	35	46.7	75	p=0.001
No	38	30.4	87	69.6	125	

In this school based study 200 children were identified with significant refractive error and were prescribed spectacles. A follow up in the form of a surprise check for use of spectacles was carried out after a period of about 3 months.

Table 2: Causes for non-wear of spectacles.

Reasons	Total	
	No.	%
Spectacles are broken or lost	20	16.39
Spectacles cause headache	7	5.73
Forgot spectacles at home	26	21.31
Use while reading only	13	10.65
Don't feel spectacles are needed	18	14.75
Concerned or teased about appearance with spectacles	38	31.14
Parents disapprove of spectacles	0	0

The study group comprised 116 (58.0%) boys and 84 (42.0%) girls. The children in the age group of 6-9 years, 10-12 years and 13-15 years were 52 (26%), 89 (44.5%) and 59 (29.5%) respectively.

A surprise visit was made after 3 months to study the spectacle compliance. It was found that 122 (61%) children were not wearing spectacles while 78 (39%) children were wearing it.

Demographic factors associated with non-compliance are described in Table 1.

Various reasons for spectacle non-compliance are given in Table 2.

DISCUSSION

The spectacle wear compliance in our study was 39% before motivation which is almost comparable to 30% from Baltimore USA and 37.7 % from rural Chin.^{11,13} Compliance much lower than that seen in the present study was 29.5% among the rural secondary school children in Pune, 19.5% from central rural India and 13.4% in Mexico.^{7,12,14} In the available literature, compliance was much higher in other studies, such as 57.8% in South India¹⁵ and 71.6% in a study conducted in Oman.^{15,16}

Maximum non-compliance was found in 13-15 years of age group (72.9%) followed by 10-12 years (57.3%) and 6-9 years (53.8%). Children in higher age group were more non-compliant probably because they were more concerned regarding their physical appearance. This finding is comparable to study carried out by Holguin C et al. in Mexico who observed that older children were less likely to be compliant than younger ones.⁷ In contrast to this, two more studies have found older teens more likely to wear spectacles as compared to younger

children.^{11,16} Age was not found to be associated with spectacle-wear in most other studies.^{8,10,12,17,18}

The present study showed that girls (65.5%) were more non-compliant as compared to boys (57.8%). This was probably due to girls being more concerned regarding their looks as compared to boys. Few studies have found girls significantly more likely to wear their spectacles than boys, but there are other studies, which have not found gender to be significantly associated with spectacle-wear.^{7,8,11,12,16-19}

It was found that children whose fathers had a higher level of education were found to be better compliant than children whose fathers were illiterate ($p < 0.05$). This finding was consistent with the study carried out in Pune by Gogate et al.¹⁴ However, parental education level was not significantly associated with spectacle wear in children in other studies that have looked at this factor.^{8,19,20}

The present study showed that spectacle compliance was also significantly associated with maternal education ($p < 0.05$). Children of less educated mothers were more likely to be non-compliant. This was probably due to lack of knowledge regarding the necessity of spectacle use in less educated mothers. Very few studies are available in the literature regarding the association of maternal education and spectacle wear compliance. A study carried out in Pune did not find significant association between maternal education and spectacle wear compliance.¹⁴

In the present study, spectacle compliance was also significantly associated with occupation of both parents ($p < 0.05$). Spectacle compliance was least in those children whose fathers were farmers and laborers, whereas it was 100% in those whose fathers were teachers. Maximum compliance was also found in those children whose mothers were school teachers. To the best of our knowledge, none of the other studies have studied the relation between maternal occupation and spectacle wear compliance in the available literature.

The effect of parental spectacle usage on spectacle wear compliance was also studied. It was found that those children whose parents were using spectacles were more compliant as compared to their counter-parts. This association was statistically highly significant ($p < 0.001$). To the best of our knowledge, this association has not been studied in any other study.

The main reasons for non-compliance regarding spectacle use in the present study were 'concerned or teased about appearance with spectacle' followed by 'forgetting spectacles at home'. Least common reason of spectacle wear non-compliance was 'can't afford spectacles' in pre-motivation group and 'spectacles causing headache' in post-motivation group. The results are comparable to study conducted at Pune wherein, the reason "teased by other children" was the single most common cause of not

wearing spectacles.¹⁴ However, in a study conducted in south India showed the most common reason of non-compliance was 'forgetting spectacles at home'.¹⁵

CONCLUSION

School teachers should explain the risk of non-wearing of spectacles and benefits of spectacle wearing to both children and their parents. If both children and parents are motivated and educated properly spectacle compliance can increase significantly. More attention should be given on those children who are of low socio economic background as their parents are less like to be well educated. Children who don't have refractive error should be taught that they should not tease fellow children who are wearing spectacles. Parents should allow their children to buy spectacle of their own choice so that they don't feel concerned regarding their appearance. Most of the children were not compliant because they were teased about, did not like, or were not comfortable in their spectacles- all societal issues that could and should be addressed.

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