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RESEARCH REPORT

Spectacle-Wear Compliance in School Children in Concepción Chile

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ABSTRACT

Purpose: Although international policies promote programs for correction of refractive errors in school children, recent studies report low compliance with respect to spectacle wear. Our aim was to assess spectacle-wear compliance and identify associated visual factors among children participating in Chile's school spectacle provision program.

Methods: A total of 270 school children were prescribed spectacles and monitored after 1 year. Visual acuity, refractive error, reasons for not wearing spectacles, and self-reported visual function were assessed. Compliance is reported as the proportion of children wearing spectacles at the 1-year visit. Factors associated with compliance and reasons for not wearing spectacles were examined using contingency table analyses. Logistic models were constructed to assess independently associated factors.

Results: Only 204 children (76%) participated in the 1-year follow-up. Mean age was 10 years (range 4–19 years); 58% were girls, 42% boys. Overall compliance was 58%. Spectacle use was independently associated with age and refractive error. Older children were less likely to be compliant (odds ratio, OR, 0.8, 95% confidence interval, CI, 0.76–0.92/year of increasing age). Compared with children with refractions of −0.75 to +0.75 diopters, both myopic and hyperopic children were more compliant (OR 4.93, 95% CI 2.28–10.67 and OR 2.37, 95% CI 1.06–5.31, respectively). Primary reasons for not wearing spectacles included breakage/loss in younger children, and disliking the appearance in teenagers.

Conclusion: We found greater compliance in spectacle wear than that reported in most published studies. Guidelines for provision of children's spectacles should consider excluding children with mild refractive error and improving spectacle quality and appearance.

Keywords: Glasses quality and appearance, Latin America, refractive error correction, school children, spectacle-wear compliance, vision-screening

INTRODUCTION

Correction of refractive error with appropriate spectacles is among the most cost-effective vision-improving interventions in eye care.[1] The need for services as well as potential impact(s) of school-based programs vary widely among groups and areas because: (i) prevalence of refractive errors in school-age (5–15 years) children varies; (ii) myopia increases with age; (iii) prevalence is greater in urban areas; and (iv) prevalence is higher in children of Asian origin.[2] Refractive error – associated primarily with myopia – is a major cause of reduced vision in school-age children in urban areas of Santiago de Chile, and it is speculated that at least 7% of children could benefit from the

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provision of proper spectacles.[3] The World Health Organization (WHO) has published recommendations for elimination of avoidable visual disabilities caused by refractive error,[4] as well as devised action plans[5] for reducing visual disability through detection and treatment of uncorrected refractive error in school-age children.

Correctable visual impairment has been associated with social factors, available services, and various individual barriers.[6] The last, which includes failure to follow-up with eye exams after failed school vision screenings, is associated with parental and children's perceptions of vision problems,[7] peer pressure, and concerns about the safety of spectacles,[8] even when provided for free. Indeed, doubts have been raised about the value of vision screening programs in secondary schools.[9] The aim of school screening programs is to identify school children who can benefit from spectacle use. Although several authors in the United Kingdom have concluded that this aim alone does not justify continuation of routine screening in junior high schools,[10] uncorrected myopia among school-age children in rural China is a major public health problem that requires detection and treatment.[11] In India, school-based screening for refractive errors is considered highly cost effective for ages 7–15 years.[12]

There are very few Latin American studies on compliance with spectacle wear or factors associated with spectacle use in children. In a study of school children in Oaxaca, Mexico, compliance with spectacle wear was quite low (13%), despite the fact that spectacles were provided free of charge. Such low compliance was particularly evident among older and urban children, all of whom were more likely to have concerns related to the appearance of spectacles or being teased.[13] In Chile, a national school vision-health program was implemented in 1994 under the auspices of the Junta de Auxilio Escolar y Becas (JUNAEB), Ministry of Education, whose mission was detection and treatment of visual impairment associated with refractive error in school-age children. The national norm prioritizes children in the first and sixth grades of primary school (6 and 11 years of age, respectively). Although the program provides these services to children of all ages and grades[14] and uses established criteria and guidelines,[15] the procedures vary widely.[16–18] Visual acuity (VA) is first ascertained by school teachers and then by an ophthalmic technician. Children with VA <20/40 are referred to an ophthalmologist for prescription of spectacles (provided free of charge by the JUNAEB program) to those children in need. In 1998, a refractive error study, conducted by Maul and colleagues in a suburban area of Santiago de Chile,[3] revealed that only 25% of children with uncorrected VA $\leq$20/40 in both eyes were wearing spectacles at the time of the examination.

Although annual JUNAEB client satisfaction surveys, conducted on random representative samples, demonstrated high satisfaction by parents, children, and teachers, there are no available data on compliance of spectacle use and/or facilitating factors. Thus, the aims of this study were to: (i) report 1-year compliance on spectacle use in children receiving their first prescription; and (ii) examine factors associated with compliance.

MATERIALS AND METHODS

This study was approved by the Ethics and Scientific Review Committees of the Hospital de Concepción and JUNAEB Direction, Santiago de Chile.

The study was carried out in the city of Concepción, the third largest municipality in Chile, with a population of 216,000 inhabitants. Concepción was chosen because it services the population of the Hospital de Concepción, is the hospital wherein the principal investigator of the study is based, and is representative of metropolitan areas of Chile.

The database of the JUNAEB program was used to identify pre-kindergarten to eighth-grade children who had been prescribed and provided with spectacles for the first time during the second half of 2010. For inclusion in the study, children were screened by a teacher and referred by the ophthalmic assistant to the ophthalmologist, who prescribed first-time, permanent-use, free-of-charge spectacles for correction of visual impairment resulting from refractive error. Screening was in place for all school grades, but priority was given to first and sixth-graders. The program provided spectacles to children with VA <20/40 in either eye, myopia >0.75 diopters (D), >1.5D of astigmatism, or hyperopia.

A list of all eligible children in participating schools was compiled, and schools were informed as to survey procedures, but were given no information as to the exact date and time of the survey. The day before the examinations, the survey team notified the coordinator of the particular school about the research team's intended visit to examine eligible children. Although parents, children, and teachers were aware of the study and had given verbal consent to participate, they, too, had not been notified as to the exact visit date.

A total of 53 schools in the study area were part of the JUNAEB program. During the second half of 2010, 270 children in these schools received a first-time prescription for spectacles. The number of prescriptions varied among schools, and the average number of children per school with a first-time prescription was 5.4, with a range of 1–20. The study was conducted 1 year after prescription and provision of spectacles occurred.

Reasons for using or not using spectacles were sought on the day the school was visited. This question was asked separately of the child and his/her teacher. In addition, four questions related to visual function difficulties were asked of each child. VA and refractive error type were assessed. The data form included basic information (name, school, age, sex, teacher name, urban/rural locale) and date of spectacle provision. VA was measured using an abbreviated Snellen chart at 3 m, with daylight illumination. VA was measured with and without available correction, and with pinhole. Refraction was extracted from clinical records or from measurement of the prescribed spectacles (if available). Self-reported visual function was assessed using the following four questions: (i) How much difficulty do you have seeing the blackboard if you are not seated in the front row?; (ii) How much difficulty do you have reading a notebook if it is not close?; (iii) How much difficulty do you have seeing the steps of a stair?, and; (iv) How much difficulty do you have watching television if it is not close?

Any eligible child who was not wearing spectacles during assessment was classified as non-compliant and this prescription was removed from the database. If the child was wearing spectacles, they were measured and compared to the prescription registered in the database.

We attempted to survey all 270 eligible children in order to maximize the power to identify major factors associated with compliance with spectacle use. For an expected compliance level of 60% and a 75% follow-up rate, the width of the 95% confidence interval (CI) for the compliance estimate is ±7%. In addition, at 60% compliance and at a significance level of 0.05, the study had an 80% power to detect odds ratios (ORs) >2.2, if the exposure factor is present in half of the population. For purposes of analysis, myopia was defined as sphere in either eye ≤ -0.75D, astigmatism as an absolute value of the cylinder in either eye $\geq$1.5D, and anisometropia as a difference in sphere between eyes >1D or differences in cylinder between eyes >1.5D.

Factors associated with compliance and reasons for not wearing spectacles were examined using contingency tables. Chi-square, Fisher's exact, and trend tests were used to test for significant differences, as appropriate. Multivariate logistic models were constructed to assess factors independently associated with compliance.

RESULTS

There were 270 children eligible for the study in the JUNAEB database for the year 2010. Of these, 204 (75.6%) participated in the 1-year follow-up survey following prescription of eyeglasses. Reasons for non-participation included children were absent or no longer attended the school ($n = 49$), and children were $\geq$18 years old and were at senior school levels ($n = 17$; Table 1).

TABLE 1. Participants in a school survey of spectacle-wear compliance, Concepción, Chile.

	In data base JUNAEB 2010		Eligible to participate	
Polls	*n*	%	*n*	%
Surveyed	204	75.6	204	80.6
Unavailable	49	18.1	49	19.4
Passed to middle level school	17	6.3		
Total	270	100.0	253	100.0

Five participating children were excluded from analysis because they did not fulfill the vision requirements for spectacle prescription by the JUNAEB program, i.e. spectacles had been prescribed to them at their parent's request despite a small refractive error. Hence, the analysis treated data from 199 children.

The survey consisted of one interview with the student and one interview with the teacher. Concordance between student-reported data and teacher-reported data was excellent (97%), with a kappa statistic of 0.94 (95% CI 0.89–0.99). Student interviews revealed that 58% of students were using their spectacles and teacher interviews revealed that 55% of students were wearing spectacles.

Mean age at follow-up was 10 years, 57.8% were girls and 42.2% were boys, with all grades from preschool to eighth grade represented. Overall, 79.4% of children had astigmatism, 30.7% myopia, and 11.6% anisometropia. At the follow-up examination, 5.6% of children had bilateral presenting vision <20/40 (Table 2).

At the time of the follow-up exam, 78% of spectacle-wearing children had presenting vision $\geq$20/20 compared with only 58% of those not wearing their spectacles ($p < 0.001$). After best correction, the proportion of children seeing $\geq$20/20 increased in both groups to 90% and 77%, respectively ($p = 0.01$; Table 3). Student- and teacher-reported spectacle-wear compliance was 58% and 55%, respectively. Concordance between the two was excellent (97%), with kappa statistic 0.94 (95% CI 0.89–0.99).

Spectacle use was associated with age of the child, with compliance decreasing with increasing age; 77.6% in children <8 years to 46.0% in children $\geq$14 years ($p = 0.004$). Younger children were more likely to be hyperopic ($p = 0.0$, test for trend). When restricting the analysis to myopic children, mean spherical equivalent refraction for the different age categories were similar. Stratified analysis by age for the more severely affected eye is presented in Table 4.

Girls were more likely to be compliant than boys, but the difference was not statistically significant.

Compliance was similar in children with differing types of refractive error (i.e. myopia, astigmatism, and hyperopia), but was significantly related to severity of refractive error, i.e. when spherical equivalent refraction in the worse eye was −0.75 to +0.75D, compliance was 36.5% compared with 68.5% in those with spherical equivalent refraction <−0.75D (Table 5). Multivariate analysis revealed that both age and level of refractive error in the worse eye were independently associated with compliance. Furthermore, older children were less likely to be compliant (OR 0.83, 95% CI 0.76–0.92 per 1 year of increasing age). When compared with children whose refraction was between −0.75D and 0.75D, it was demonstrated that both myopic and hyperopic children were more likely to be compliant (OR 4.93, 95% CI 2.28–10.67 and OR 2.37, 95% CI 1.06–5.31, respectively).

The most common reasons given by students for not wearing their spectacles were breakage (22%) and/or dislike of their spectacles (21%; Table 6), and varied by age. A higher proportion of children aged <8 years reported broken (27.3%) or lost (18.1%) spectacles compared with older children. With increasing age, there was a tendency towards an increase in the proportion of children reporting dislike of their spectacles or seeing the same without them. Furthermore, there were sex differences in the arguments given for not wearing spectacles. A higher proportion of girls reported broken lenses or forgetting to wear them compared to boys. Conversely, a higher proportion of boys reported disliking their spectacles. With respect to refractive error level, when compared with children with absolute refractive error >0.75D, a higher proportion of children with spherical equivalent refraction in the worse eye of −0.75 to +0.75D reported no improvements in vision while wearing spectacles.

The most common reasons given by teachers for children not using spectacles were ''did not know

TABLE 2. Characteristics of 199 children included in the analysis of spectacle-wear compliance, Concepción, Chile.

Characteristic	*n* (%)
Mean age, years (SD, range)	10.4 (3.3, 4–19)
Girls	115 (57.8)
School grade	
Kindergarten	5 (2.5)
First	18 (9.0)
Second	43 (21.6)
Third	22 (11.1)
Fourth	27 (13.6)
Fifth	19 (9.5)
Sixth	22 (11.1)
Seventh	24 (12.1)
Eight	9 (4.5)
Not available	10 (2.5)
Refractive Error	
Myopia	61 (30.7)
Astigmatism	158 (79.4)
Hypermetropia	23 (11.6)
Anisometropia	23 (11.6)
Presenting VA both eyes[a]	
20/20	138/(70.0)
20/25–20/40	48 (24.4)
<20/40	11 (5.6)

SD, standard deviation; VA, visual acuity
[a]Unable to assess VA in two children.

TABLE 3. Visual acuity with spectacle use at follow-up visits of school children in Concepción, Chile.

		Without spectacles		With spectacles		
Follow-up VA	VA	*n*	%	*n*	%	Fisher's exact *p* value
Bilateral presenting VA	20/20	48	58.5	90	78.3	<0.001
	20/25–20/40	31	37.8	17	14.8	
	<20/40	3	3.7	8	7.0	
Bilateral BCVA	20/20	63	76.8	104	90.4	0.014
	20/25–20/40	18	22.0	11	9.6	
	<20/40	1	1.2	0	0	

BCVA, best-corrected visual acuity; VA, visual acuity

TABLE 4. Distribution and magnitude of refractive error by age category in children in Concepción, Chile.

		Spherical equivalent refraction					
		<−0.75D		≥−0.75 to ≤+0.75D		>0.75D	
Age group, years	*n*	%	Mean, D	%	Mean, D	%	Mean, D
<8	48	27.1	−1.88	22.9	0.20	50.0	1.75
8–10	52	32.7	−2.09	32.7	−0.13	34.6	1.67
11–13	61	59.1	−1.75	24.6	−0.30	16.4	2.06
≥14	37	62.2	−1.90	24.3	0.19	13.5	1.90

D, diopters

their vision problem'' (25%) and ''breakage/loss'' (22%). There were differences in the kinds of reason for noncompliance by age. Compared with older children, a higher proportion of younger children stated that their spectacles were forgotten at home or the spectacles were lost. Teachers reported ''unknown use'' in 40% of children with spherical equivalent refraction in the worse eye of −0.75 to +0.75D.

The primary reasons given by the children for wearing spectacles are shown in Table 7. The perception of better vision was the most common reason (58%). A higher proportion of children reported seeing better when spherical equivalent refraction was below −0.75D in the worse eye (64%) compared with approximately half of those with spherical equivalent above 0.75D (47%). In addition, a higher proportion of children with spherical equivalent refraction in the worse eye of −0.75 to +0.75D reported that their spectacles were prescribed for ''eye strain'' (16%) compared with 3% of those with spherical equivalent outside that range.

Children report a positive impact on visual function from spectacle use (Table 8). There were differences in level of visual difficulty, depending on whether the child reported using their spectacles or not. Children who did not wear spectacles reported having more difficulty seeing the blackboard from a distance ($p < 0.001$) and more difficulty watching TV from a distance ($p = 0.016$).

TABLE 5. Factors associated with spectacle use in children in Conceptión, Chile.

Characteristic	Spectacle use		p value, test for trend
	n	%	
Age, years			0.004
≤7	49	77.6	
8–10	52	53.9	
11–13	61	54.1	
≥14	37	46.0	
Sex			0.25
Male	84	53.6	
Female	115	61.7	
Reason for prescription[a]			
Myopia	61	62.3	
Astigmatism	158	58.9	
Hyperopia	23	65.2	
Anisometropia	23	60.9	
Spherical equivalent refraction (better eye)			
<−0.75D	48	72.9	0.002
−0.75 to +0.75D	112	47.3	
>0.75D	39	71.8	
Spherical equivalent refraction (worse eye)			<0.001
<−0.75D	89	68.5	
−0.75 to +0.75D	52	36.5	
>0.75D	58	62.1	
Proportion wearing spectacles	199	58.3	

[a]More than one reason may be given for each participant.
D, diopters

DISCUSSION

Compliance in spectacle use in Concepción, Chile, was greater than that reported in most published studies. In Chile, it was found to be significantly associated with severity of refractive error and younger age at the time spectacles were first prescribed. Noncompliance was related to broken or lost spectacles or appearance. In Latin America, although correction of refractive error in school children has long been considered a priority[19,20] and was included in the WHO regional plans,[5] compliance was never assessed in a national program. This study provides the first information on spectacle-wear compliance in school children prescribed spectacles in Concepción, Chile. Moreover, this study provides important data on factors associated with compliance, thus providing information with which to guide future policy decisions. The study is representative of an urban setting in Chile, and may not represent national compliance.

TABLE 6. Non-compliant children's reasons for not wearing spectacles, Conceptión, Chile.

Characteristic	n	Broken, %	Disliked, %	Vision same, %	Vision worse, %	Lost, %	Headache, %	Jokes made, %	Forgot, %	Other, %
Age, years										
≤7	11	27.3	0.0	0.0	9.1	18.1	0.0	0.0	18.1	27.3
8–10	24	25.0	20.8	8.3	8.4	4.2	4.2	0.0	12.5	16.7
11–13	28	17.8	21.4	21.4	3.6	3.6	7.1	7.1	17.9	0.0
≥14	20	20.0	30.0	30.0	5.0	5.0	10.0	0.0	0.0	0.0
Sex										
Male	39	15.4	28.2	12.8	12.8	7.7	2.6	2.6	7.7	10.3
Female	44	27.3	13.6	20.5	0.0	4.5	9.1	2.3	15.9	6.8
Spherical equivalent refraction in the worse eye										
<−0.75D	28	25.0	17.9	21.4	3.6	3.6	7.1	3.6	14.3	7.1
−0.75 to +0.75D	33	12.2	24.2	24.2	12.1	3.0	3.0	3.0	9.1	9.1
>0.75D	22	31.8	18.2	0.0	0.0	13.6	9.1	0.0	13.6	13.6
Total	83	21.7	20.5	16.9	6.0	6.0	6.0	2.4	12.0	8.4

D, diopters

TABLE 7. Reasons given by compliant children for spectacle wear, Concepción, Chile.

Characteristic	*n*	Followed indication for permanent use, %	Followed indication of use for eye strain, %	Followed medical prescription, %	Perceived seeing better, %	Reported improved school grades, %	Followed mother's orders, %	Other, %
Age, years								
≤7	38	15.8	0.0	13.2	60.5	0.0	1.7	5.3
8–10	28	14.3	7.1	25.0	46.4	3.6	3.6	0.0
11–13	33	15.1	9.1	21.1	54.6	0.0	0.0	0.0
≥14	17	5.9	5.9	11.8	76.5	0.0	0.0	0.0
Spherical equivalent refraction in the worse eye								
<−0.75D	61	14.7	3.3	14.8	63.9	0.0	1.6	1.6
−0.75 to +0.75D	19	10.5	15.8	10.5	57.9	5.3	0.0	0.0
>0.75D	36	13.9	2.8	27.8	47.2	0.0	5.6	2.7

D, diopters

TABLE 8. Visual function reported by children stratified by compliance with spectacle use, Concepción, Chile.

		Noncompliant		Compliant		
Question	Level of difficulty	*n*	%	*n*	%	*p* Value
How much difficulty do you have seeing the blackboard if you are not located in the front row?	Much	16	19.5	4	3.6	<0.001
	Little	33	40.2	24	21.8	
	None	33	40.2	82	74.6	
How much difficulty do you have seeing the notebook if it is not close?	Much	2	2.4	1	0.9	0.63
	Little	9	11.0	10	9.1	
	None	71	86.6	99	90.0	
How much difficulty do you have seeing the steps of a stair?	Much	2	2.4	1	0.5	0.69
	Little	4	4.9	5	4.6	
	None	76	92.7	104	94.6	
How much difficulty do you have seeing television if it is not close?	Much	8	9.9	3	2.7	0.016
	Little	28	34.6	26	23.9	
	None	45	55.6	80	73.4	

Student- and teacher-reported spectacle-wear compliance revealed a higher prevalence of use compared to that reported in other studies.[8,9,11,21–23] A study in Mexico revealed that spectacle-wear compliance was very low, even when spectacles were provided for free.[13] The high degree of compliance in Concepción may be due to the fact that the JUNAEB program is part of a very well-organized children's national school health program, one which has been in effect since 1994 and which provides spectacles free of charge. In another study,[9] children given free spectacles were more likely to wear them than were children who had to purchase them. Acceptance of the JUNAEB program, as well as its high quality, are well-documented by annual customer satisfaction surveys.[17] Our notable results on compliance in a mostly urban population contrast with those of studies that reported low compliance in urban settings.[8,9–13] In the present study, a high percentage of children with vision-reducing refractive error were wearing spectacles. Compared with the small percentage reported for Santiago de Chile in 1998,[3] it can be seen that the JUNAEB program, which has continually been improving its procedures,[15] is more effective.

Increasing age is a risk factor for noncompliance ($p = 0.004$), with younger children more likely to comply. It is unlikely that the reason for better compliance observed in younger children is related to the severity of their refractive error. It is conceivably due to the fact that younger children are more likely to obey the instructions of parents and teachers. The suggestion thus emerges that prescribing spectacles at an early age is a more effective intervention, despite the fact that myopia increases with age and may not peak until well beyond 15 years of age.[3] Our findings coincide with those of the Mexican study,[13] which reported that increasing age and prescribing spectacles for low degrees of refractive error reduced compliance. These findings argue in favor of conducting screenings at younger ages and modifying the current Latin American recommendation that prioritizes screening only for teenagers.

The type of refractive error (myopia, hyperopia, astigmatism) did not influence spectacle-wear compliance, although the severity of the refractive error was a predicting factor for compliance. In this study, the 16% of children with spherical equivalent refraction −0.75 to +0.75D showed very low use of

spectacles (36%). The efficacy of the program in that refractive error range remains poor, similar to the Mexican study,[13] and suggests that programs should prescribe spectacles to school children with spherical equivalent refraction $\geq$1D. This is in agreement with a study performed among Native American children that were provided with spectacles free of charge through a school-based vision program, where the best predictive factor for determining whether participants were wearing spectacles was their uncorrected acuity.[24] In a rural district in India, spectacle-wear compliance was poor among school children, many having significant vision loss as a result.[25]

The difference between boys and girls with regard to prevalence of spectacle use was not statistically significant in the Mexican study,[13] in contrast with the higher compliance for girls found in other studies in South Africa and China.[22,23] There were sex differences for noncompliance in Concepción. Girls reported that their spectacles were broken or forgotten, while boys reported that they did not like them. Children <8 years of age were more likely to report that their spectacles were broken or lost, a finding that may be accounted for by the fact that younger children have fewer visual classroom demands. Thus, it might be a good idea to have a system for replacement of broken or lost spectacles for younger children. Older children were more likely to be concerned about their appearance, with 20.5% reporting that they did not like their spectacles, a finding also reported elsewhere.[13] Peer pressure or jokes about wearing glasses was reported in only a very small percent of children in Concepción, in contrast to that reported in the Mexican[13] and other studies,[2] which reported peer pressure to be a factor that discouraged spectacle use. We do not have a clear explanation for this difference, but it is likely that there was under-reporting resulting from children/teacher difficulties in recognizing sensitivity to teasing by one's peers. Despite the limited success of pilot testing and focus groups to evaluate reasons for spectacle purchase or wear in programs in other regions of the world,[26] more qualitative studies are needed to improve the understanding of these barriers, perhaps through focus groups or in more detailed interviews with children, teachers and parents. More effort is needed to determine frame styles that are cosmetically acceptable as well as campaigns to increase the acceptance of spectacles. In our study, there were no safety concerns about spectacle use, in contrast to the results of two Tanzanian studies,[8,9] which may have been related to socioeconomic status and cultural factors.

As expected, there was evidence that a higher proportion of spectacle-wearing children reached a presenting VA of 20/20 versus those not wearing spectacles, a finding that reaffirms the positive impact of the program. However, the improvement in VA observed in both groups after best-correction suggests a need for periodic re-examinations to update prescriptions since the severity of myopia tends to increase with age in this specific age bracket. Among children not wearing spectacles, 23% remained visually impaired after best-correction, suggesting an association with amblyopia. Some children may have had additional pathologies or may have been uncooperative during the VA exam. Cases where visual impairment persisted after refractive correction would require further examination, analysis and treatment.

The high concordance of data provided by the school teachers and children suggests that information provided by the teachers on spectacle compliance is accurate enough to be used by the JUNAEB program for further assessment designed to reduce complexity of the study design and improve fieldwork.

The perception of better VA, and reduction in difficulty seeing the blackboard and watching TV from a distance were reported by the majority of children as the main reasons for wearing their spectacles. However, poor distance VA did not deter noncompliance in some children. Near VA or seeing the steps of a stair did not represent a visual effort for children, regardless of the use of spectacles. Information, education, and communication programs that aim to increase compliance should focus on determining the main reasons for spectacle wear among children and confirm with qualitative research.

Some teachers were unaware of the reasons for the prescriptions to children who were not wearing spectacles. Thus, more feedback and information should be provided to school teachers by the program to motivate them to encourage children to wear their spectacles in the classroom.

More studies on the efficacy of school screening programs in Chile and other Latin American countries are expected to provide information basic to policy changes leading to more effective and resource-saving programs. Part-time spectacle use is not a popular strategy in Chile, but it can be implemented and assessed in the future. More Latin American studies to assess compliance and associated factors, as well as to guide future national and regional policies in refractive error detection and correction in school children are also needed.

DECLARATION OF INTEREST

The authors no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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