JAMA Ophthalmology | Original Investigation

# Predictors of Spectacle Wear and Reasons for Nonwear in Students Randomized to Ready-made or Custom-made Spectacles

## Results of Secondary Objectives From a Randomized Noninferiority Trial

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**IMPORTANCE** Visual impairment from uncorrected refractive errors affects 12.8 million children globally. Spectacle correction is simple and cost-effective; however, low adherence to spectacle wear, which can occur in all income settings, limits visual potential.

**OBJECTIVE** To investigate predictors of spectacle wear and reasons for nonwear in students randomized to ready-made or custom-made spectacles.

**DESIGN, SETTING, AND PARTICIPANTS** In planned secondary objectives of a noninferiority randomized clinical trial, students aged 11 to 15 years who fulfilled eligibility criteria, which included improvement in vision with correction by at least 2 lines in the better eye, were recruited from government schools in Bangalore, India. Recruitment took place between January 12 and July 15, 2015, and analysis for the primary outcome occurred in August 2016. Data analysis for the secondary outcome was conducted in August 2018. Spectacle wear was assessed by masked observers at unannounced visits to schools 3 to 4 months after spectacles were distributed. Students not wearing their spectacles were asked an open-ended question to elicit reasons for nonwear.

**MAIN OUTCOMES AND MEASURES** Predictors of spectacle wear and reasons for nonwear.

**RESULTS** Of 460 students recruited and randomized (52.2% male; 46 students aged 11 to 12 years and 13 to 15 years in each trial arm), 78.7% (362 of 460) were traced at follow-up, and 25.4% (92 of 362) were not wearing their spectacles (no difference between trial arms). Poorer presenting visual acuity (VA) and improvement in VA with correction predicted spectacle wear. Students initially seen with an uncorrected VA less than 6/18 in the better eye were almost 3 times more likely to be wearing their spectacles than those with less than 6/9 to 6/12 (adjusted odds ratio, 2.84; 95% CI, 1.52-5.27). Improvement of VA with correction of 3 to 6 lines or more than 6 lines had adjusted odds ratios of 2.31 (95% CI, 1.19-4.50) and 2.57 (95% CI, 1.32-5.01), respectively, compared with an improvement of less than 3 lines. The main reason students gave for nonwear was teasing or bullying by peers (48.9% [45 of 92]). Girls reported parental disapproval as a reason more frequently than boys (difference, 7.2%).

**CONCLUSIONS AND RELEVANCE** Three-quarters of students receiving spectacles were wearing them at follow-up, which supports the use of the prescribing guidelines applied in this trial. Predictors of spectacle wear, poorer presenting VA, and greater improvement in VA with correction are similar to other studies. Interventions to reduce teasing and bullying are required, and health education of parents is particularly needed for girls in this setting.

**TRIAL REGISTRATION** isrctn.org Identifier: ISRCTN14715120

*JAMA Ophthalmol*. doi:10.1001/jamaophthalmol.2018.6906
Published online January 31, 2019.

Invited Commentary

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Refractive errors (REs) affect people of all ages, both sexes, and in all settings (ie, high-, middle-, and low-income regions and urban and rural locations). Uncorrected RE (uRE) is the most common cause of avoidable visual impairment and the second leading cause of blindness.[1,2] Data from the Global Burden of Disease Study indicate that there are 6.6 million people who are blind (presenting visual acuity [VA] worse than 3/60 in the better eye) and that 101.2 million are visually impaired (presenting VA worse than 6/18 in the better eye) simply because they do not have a pair of spectacles.[3] In the United States, half of the population older than 20 years has an RE.[4] Some regions and countries are disproportionately affected by visual impairment due to REs because of the increasing prevalence of myopia in Asia.[5]

Despite correction of REs being highly cost-effective,[6-8] uREs are the most common cause of visual impairment in children. Global estimates from 2004 indicate that there are 12.8 million children visually impaired from uREs[2] (ie, 1% of all children), and this is set to rise with the increasing incidence of myopia in what is now an "epidemic" in East Asia, Europe, and the United States.[5,9,10] Although the prevalence of REs varies by region, uREs are the leading cause of visual impairment in school-age children in all regions.[2]

Visual impairment can negatively alter a student's academic performance,[11] visual functioning,[12] behavioral development,[12] and quality of life.[8] For example, self-reported visual function improved with spectacle wear in a study[13] in Mexico. An Australian study[14] found that children who failed vision screening had significantly lower academic achievement than their peers who passed screening. There is also evidence from a study[15] in the United States that providing children with spectacles was associated with better academic performance and improved psychosocial well-being.

The high prevalence of visual impairment due to uREs and the benefits of spectacle wear have led to large-scale school eye health screening programs in many countries, including India. However, the delivery of these programs is not standardized, and many do not monitor whether students actually use their spectacles.[16] Where studies have reported spectacle wear, it is difficult to compare the findings because different methods have been used (ie, observed wear or self-reported wear), with variable intervals and definitions (ie, some studies define wear as spectacles were being used at the time of assessment, whereas other studies included students who had their spectacles at school). The available evidence suggests that low rates of spectacle wear are a significant issue in all income settings. For example, only 33.2% of Native American students in the United States were wearing their spectacles[17] and 29.4% of schoolchildren in rural areas near Delhi, India.[18]

Numerous studies have investigated reasons why students do not wear their spectacles, which include loss or breakage,[19-22] misconceptions that using spectacles will make their vision worse,[16,23,24] parental disapproval,[18,25] being teased,[16,19,20,24-26] and forgetfulness.[20,21,23,25,27,28] In a 2013 study[29] from India, reasons for not wearing spectacles included being teased (19.9%), the spectacles were broken (17.4%) or lost (9.3%), and the child did not like his or her spectacles (12%). Students with more severe uREs[17] and girls[23] are more likely to wear their spectacles. The evidence of associations between socioeconomic status and parental education and spectacle wear is inconclusive.[16,24,30,31]

### Key Points

**Question** Are there predictors of spectacle wear and reasons for nonwear in children randomized to ready-made or custom-made spectacles?

**Findings** In a planned analysis of the secondary objectives of a noninferiority randomized clinical trial among 460 students, 2 predictors of spectacle wear were poorer presenting visual acuity and greater improvement in visual acuity with correction; these findings support the use of prescribing guidelines. The main reason for nonwear was teasing or bullying by peers.

**Meaning** These results suggest that, in school-based eye health programs, the use of improvement in the better eye as a basis for prescribing spectacles means that students are more likely to wear them; interventions to address teasing and bullying might address nonwear.

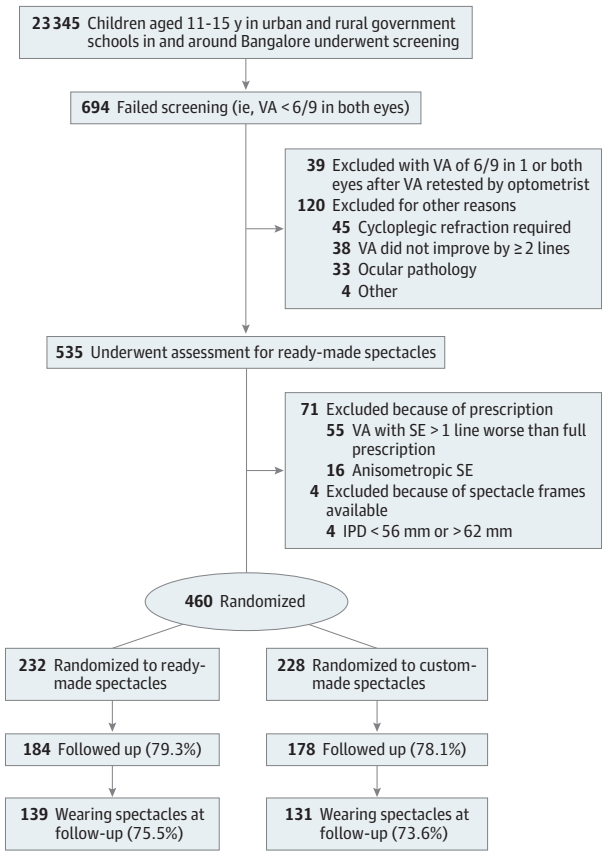
The results presented in this article reflect the planned secondary objectives of a noninferiority randomized clinical trial undertaken in Bangalore, India, the goal of which was to compare spectacle wear in school students randomized to ready-made or custom-made spectacles.[32] Spectacle wear in both trial arms was similar, including 139 of 184 students (75.5%) in the ready-made arm and 131 of 178 students (73.6%) in the custom-made arm (risk difference, 1.8%; 95% CI, −7.1% to 10.8%).[33] Herein, we report reasons for nonwear and predictors of wear among students recruited to this trial.

## Methods

The trial protocol[32] was published in January 2016. Primary outcome data[33] (ie, spectacle wear at unannounced follow-up visits) were published in June 2017. Institutional review board approval was from the ethics committee at London School of Hygiene and Tropical Medicine and the institutional review board at Sankara Eye Institute, Bangalore, India. An information sheet in the local language was sent to the parents of each child aged 11 to 15 years before screening. If parents did not want their child to be screened, they were requested to complete and return the form.

Recruitment took place between January 12 and July 15, 2015, from government schools in urban and periurban areas surrounding Bangalore, India (**Figure**). Spectacle wear was analyzed in March 2016, and the reasons for nonwear were analyzed in August 2018. Students were screened in the schools. Those who did not pass screening (ie, presenting VA less than 6/9 in one or both eyes) were referred to the study optometrist for complete objective and subjective refraction and to assess their eligibility for recruitment, which included improvement in vision with correction by at least 2 lines in the better eye. To be eligible, all children had to fail vision screening (ie, have a presenting VA less than 6/9 in the better eye)

Figure. Study Flowchart




Reprinted from Morjaria et al.[32] IPD indicates interpupillary distance; SE, spherical equivalent; VA, visual acuity.

and be suitable for ready-made spectacles according to the following criteria: (1) the spherical equivalent corrected the VA to not more than 1 line less than best-corrected VA with a full prescription in the better eye, (2) the difference between the spherical equivalent of right and left eyes was not more than 1.0 diopter, (3) interpupillary distance matched that of ready-made spectacle frames available (ie, 54-62 mm), and (4) spectacle frames were of acceptable size and fit. In both trial arms, students were only prescribed spectacles if their VA with full correction improved by 2 or more lines in the better eye, regardless of presenting VA or degree of RE.

Eighty-six percent (460 of 535) of those who failed screening were eligible for recruitment. Students selected the spectacle frame they preferred from a range of 6 different colors of metal and plastic frames. The spectacles (ready-made and custom-made) were provided free and were delivered to students in schools at the same time. Students not meeting the strict eligibility criteria were dispensed spectacles but were not included in the trial. This included students with reduced VA in only 1 eye. Data on the following sociodemographic variables were collected from students recruited to the trial: parental literacy, parental spectacle wear, ownership of a mobile phone, and assets (mobile phone, radio, television, motorbike/moped, or bicycle owned).

Spectacle wear and reasons for nonwear were assessed at the time of unannounced visits to the schools 3 to 4 months after students were given their spectacles. Spectacle wear was assessed by field workers masked to which trial arm the students were allocated. Spectacle wear was categorized as follows: (1) students were wearing their spectacles at the time of the visit, (2) students were not wearing their spectacles but had them at school, (3) students were not wearing their spectacles but said they were at home, or (4) students said they no longer had the spectacles because they were broken or lost.[16] Categories 1 and 2 were defined as wearing and categories 3 and 4 as nonwearing. At this visit, students in categories 3 and 4 were asked an open-ended question to elicit reasons for nonwear. A list of themes was developed based on a review of the literature, with the addition of further themes as required. All responses were coded accordingly.

Data for adherence to spectacle wear and reasons for nonwear were double entered into a database created in EpiData (version 3.1; EpiData Association) by the lead investigator (P.M.). For the analysis of predictors of wear, descriptive analyses were used, which tabulated the proportion of students wearing spectacles against the following predictors: age, sex, presenting VA in the better eye, improvement in VA with correction, parental literacy, parental spectacle wear, ownership of a mobile phone, and number of assets owned. We analyzed all these variables in a multivariable logistic regression model. Presenting VA in the better eye and improvement in VA with correction were collinear and were included in separate models. Data were analyzed using statistical software (Stata, version 15.1; StataCorp LP).

## Results

A total of 460 students eligible for ready-made spectacles were recruited and randomized (232 to ready-made spectacles and 228 to custom-made spectacles). At follow-up, 362 students (78.7%) were traced (79.3% [184 of 232] in the ready-made arm and 78.1% [178 of 228] in the custom-made arm). Ninety-two of the 362 students (25.4%) were not wearing their spectacles, with no difference between trial arms. Of the 362 students, 182 (50.3%) were boys, and 46 were aged 11 to 12 years and 13 to 15 years in each trial arm.

**Table 1** summarizes the association between predictors of wear (age, sex, presenting VA in the better eye, improvement in VA with correction, parental literacy, parental spectacle wear, ownership of a mobile phone, assets owned, and allocation to the trial arm) and wearing spectacles at 3 to 4 months after they were prescribed. Only presenting VA in the better eye (crude odds ratio [OR] for presenting VA <6/18, 2.91 [95% CI, 1.56-5.44]) and improvement in VA with correction (crude OR for improvement >6 lines, 2.75 [95% CI, 1.42-5.29]) were associated with spectacle wear, and this association remained after adjusting for all the variables in the table (adjusted OR, 2.84 [95% CI, 1.52-5.27] for presenting VA of <6/18 and 2.57 [95% CI, 1.32-5.01] for improvement >6 lines). These variables were collinear and were not included in the same multivariable model. Students initially seen with an uncorrected VA less than

Table 1. Univariate and Multivariable Analysis of Factors Associated With Spectacle Wear

| Variable | No. (%) | | Odds Ratio (95% CI) | |
|---|---|---|---|---|
| | Wear (n = 270) | Nonwear (n = 92) | Crude | Adjusted[a] |
| Age group, y | | | | |
| 11-13 | 125 (46.3) | 44 (47.8) | 1 [Reference] | 1 [Reference] |
| 14-15 | 145 (53.7) | 48 (52.2) | 1.06 (0.66-1.71) | 1.02 (0.62-1.67) |
| Sex | | | | |
| Male | 134 (49.6) | 48 (52.2) | 1 [Reference] | 1 [Reference] |
| Female | 136 (50.4) | 44 (47.8) | 1.11 (0.69-1.78) | 1.12 (0.68-1.84) |
| Presenting VA in the better eye[b] | | | | |
| <6/9 to 6/12 | 60 (22.2) | 33 (35.9) | 1 [Reference] | 1 [Reference] |
| <6/12 to 6/18 | 83 (30.7) | 35 (38.0) | 1.30 (0.73-2.34) | 1.28 (0.71-2.32) |
| <6/18 | 127 (47.0) | 24 (26.1) | 2.91 (1.56-5.44) | 2.84 (1.52-5.27) |
| Improvement in VA with correction[b] | | | | |
| <3 Lines | 82 (30.4) | 38 (41.3) | 1 [Reference] | 1 [Reference] |
| 3-6 Lines | 93 (34.4) | 38 (41.3) | 1.13 (0.66-1.94) | 2.31 (1.19-4.50) |
| >6 Lines | 95 (35.2) | 16 (17.4) | 2.75 (1.42-5.29) | 2.57 (1.32-5.01) |
| Parental literacy | | | | |
| Father | | | | |
| Cannot read | 97 (35.9) | 36 (39.1) | 1 [Reference] | 1 [Reference] |
| Can read | 156 (57.8) | 49 (53.3) | 1.18 (0.73-1.95) | 1.23 (0.73-2.10) |
| No father | 17 (6.3) | 7 (7.6) | 0.90 (0.34-2.36) | 1.01 (0.37-2.77) |
| Mother | | | | |
| Cannot read | 124 (45.9) | 36 (39.1) | 1 [Reference] | 1 [Reference] |
| Can read | 144 (53.3) | 53 (57.6) | 0.79 (0.48-1.28) | 0.73 (0.44-1.24) |
| No mother | 2 (0.7) | 3 (3.3) | 0.19 (0.03-1.24) | 0.21 (0.33-1.37) |
| Parental spectacle wear | | | | |
| Neither parent | 206 (76.3) | 74 (80.4) | 1 [Reference] | 1 [Reference] |
| One or both parents | 64 (23.7) | 18 (19.6) | 1.28 (0.71-2.30) | 0.78 (0.42-1.47) |
| Ownership of a mobile phone | | | | |
| Both | 133 (49.3) | 50 (54.3) | 1 [Reference] | 1 [Reference] |
| Mother only | 37 (13.7) | 13 (14.1) | 1.07 (0.52-2.18) | 0.85 (0.34-2.09) |
| Father only | 86 (31.9) | 23 (25.0) | 1.41 (0.80-2.48) | 0.67 (0.36-1.23) |
| Neither parent | 14 (5.2) | 6 (6.5) | 0.88 (0.32-2.42) | 0.87 (0.30-2.60) |
| Assets owned[c] | | | | |
| None or 1 | 119 (44.1) | 45 (48.9) | 1 [Reference] | 1 [Reference] |
| 2 | 117 (43.3) | 37 (40.2) | 1.20 (0.72-1.98) | 1.19 (0.70-2.01) |
| 3-4 | 34 (12.6) | 10 (10.9) | 1.29 (0.59-2.82) | 1.28 (0.57-2.90) |
| Trial arm | | | | |
| Ready-made spectacles | 139 (51.5) | 45 (48.9) | 1 [Reference] | 1 [Reference] |
| Custom-made spectacles | 131 (48.5) | 47 (51.1) | 1.11 (0.69-1.78) | 1.10 (0.67-1.80) |

Abbreviation: VA, visual acuity.

[a] Adjusted for all variables in the model.

[b] Included in separate models because of collinearity.

[c] Indicates mobile phone, radio, television, motorbike/moped, or bicycle owned.

6/18 in the better eye were almost 3 times more likely to be wearing their spectacles than those with less than 6/9 to 6/12 (adjusted OR, 2.84; 95% CI, 1.52-5.27). The odds of spectacle wear also increased with increasing improvement in VA with correction. Improvement of 3 to 6 lines of VA had an adjusted OR of 2.31 (95% CI, 1.19-4.50) compared with an improvement of less than 3 lines, and an improvement of more than 6 lines had an adjusted OR of 2.57 (95% CI, 1.32-5.01).

The 2 most frequent reasons for nonwear in this cohort were teasing or bullying by peers (48.9% [45 of 92]) and lost or forgot or stolen spectacles (26.1% [24 of 92]) (**Table 2**). These 2 reasons accounted for three-quarters of nonwear. Headaches or uncomfortable spectacles were uncommon reasons and did not differ according to whether the child had ready-made or custom-made spectacles. Reasons for nonwear were explored by age and sex (**Table 3**) using the age groups 11 to 12 years (preadolescent) and 13 to 15 years (adolescent). In both age groups, teasing or bullying by peers was the main reason for nonadherence, followed by lost or forgot or stolen spectacles. Girls reported parental disapproval as a reason for nonwear more frequently than boys (11.4% [5 of 44] and 4.2% [2 of 48], respectively), a difference of 7.2%, and boys reported headaches or discomfort more often than girls (10.4% [5 of 48] and 4.5% [2 of 44], respectively), a difference of 5.9%. Younger

Table 2. Reasons for Not Wearing Spectacles by Allocation Group

| Variable | No. (%) | | |
|---|---|---|---|
| | Ready-Made Spectacles | Custom-Made Spectacles | Total |
| Teasing or bullying by peers | 24 (53.3) | 21 (44.7) | 45 (48.9) |
| Lost or forgot or stolen spectacles | 14 (31.1) | 10 (21.3) | 24 (26.1) |
| Parental disapproval | 2 (4.4) | 5 (10.6) | 7 (7.6) |
| Headache or spectacles feel uncomfortable | 3 (6.7) | 4 (8.5) | 7 (7.6) |
| Broken spectacles | 2 (4.4) | 3 (6.4) | 5 (5.4) |
| Does not wear for sports | 0 | 1 (2.1) | 1 (1.1) |
| No perceived benefit of spectacles | 0 | 1 (2.1) | 1 (1.1) |
| Does not like the appearance of spectacles | 0 | 1 (2.1) | 1 (1.1) |
| Moved to the front of the class | 0 | 1 (2.1) | 1 (1.1) |
| Total | 45 (100) | 47 (100) | 92 (100) |

Table 3. Reasons for Not Wearing Spectacles by Age and Sex

| Variable | No. (%) | | | | |
|---|---|---|---|---|---|
| | Age Group, y | | Sex | | |
| | 11-12 | 13-15 | Male | Female | Total |
| Teasing or bullying by peers | 20 (43.5) | 25 (54.3) | 24 (50.0) | 21 (47.7) | 45 (48.9) |
| Lost or forgot or stolen spectacles | 15 (32.6) | 9 (19.6) | 10 (20.8) | 14 (31.8) | 24 (26.1) |
| Parental disapproval | 3 (6.5) | 4 (8.7) | 2 (4.2) | 5 (11.4) | 7 (7.6) |
| Headache or spectacles feel uncomfortable | 2 (4.3) | 5 (10.9) | 5 (10.4) | 2 (4.5) | 7 (7.6) |
| Broken spectacles | 4 (8.7) | 1 (2.2) | 4 (8.3) | 1 (2.3) | 5 (5.4) |
| Does not wear for sports | 1 (2.2) | 0 | 1 (2.1) | 0 | 1 (1.1) |
| No perceived benefit of spectacles | 1 (2.2) | 0 | 0 | 1 (2.3) | 1 (1.1) |
| Does not like the appearance of spectacles | 0 | 1 (2.2) | 1 (2.1) | 0 | 1 (1.1) |
| Moved to the front of the class | 0 | 1 (2.2) | 1 (2.1) | 0 | 1 (1.1) |
| Total | 46 (100) | 46 (100) | 48 (100) | 44 (100) | 92 (100) |

students were more likely to report that their spectacles were broken than older students (8.7% [4 of 46] and 2.2% [1 of 46], respectively). There were no significant differences in the proportion of boys or girls or younger or older students for any of the reasons for nonwear (2-sample test of proportions). As reasons for nonwear, one student reported no perceived benefit of spectacles (presenting VA of 6/24 corrected VA of 6/18), and another student reportedly does not like the appearance of spectacles. Seven students herein reported nonwear because of headache or spectacles feel uncomfortable.

## Discussion

In multivariable analysis, the 2 statistically significant predictors of spectacle wear were poorer presenting VA and greater improvement in VA with correction. Our findings support the use of prescribing guidelines, which in this study was that the corrected VA had to improve by 2 or more lines in the better eye, meaning that only students likely to perceive a benefit are prescribed spectacles. Prescribing guidelines will also reduce overprescribing, increasing the cost-effectiveness and reputation of school eye health programs. Two studies report the use of prescribing protocols, one in Australia[31] and a group of studies in China.[24] The Australian study[31] was population based, where children were considered "in need of refractive correction" if the VA improved in the better eye by at least 2 lines. The authors highlighted the need for evidence-based prescribing of spectacles because students seldom wear low prescription spectacles. In the Xichang Pediatric Refractive Error Study,[24] a school-based investigation of spectacle wear among 1900 students in China, a referral protocol was used. Spectacles were recommended for students whose VA improved by 2 or more lines with refraction. The same guideline of improvement in VA with correction was used in the present study.

As in other studies,[26,29,34,35] the main reason students herein gave for not wearing their spectacles was teasing or bullying by peers. It would have been useful to explore this in more depth through interviews with the students given spectacles, as well as among a group of students not requiring spectacles. Teasing and bullying may also have been underreported because students may not have been comfortable in expressing these views, instead reporting that the spectacles were lost or broken or that their parents disapproved.

The second reason for nonadherence in both age groups and in boys and girls was lost or forgot or stolen spectacles. This has also been cited in studies from Saudi Arabia,[36] Chile,[35] the United States,[17] and Mexico[19] and in other studies in India.[29,34,37] One way to address this would be for class teachers to be given a spare pair of spectacles. To our knowledge, 2 studies[17,20] have used this strategy, both in the United States. The first study[20] actively in-

volved teachers by giving them a list of the students in their class prescribed spectacles and when the students should wear them. The teacher was responsible for monitoring and encouraging students to use their spectacles. In the second study,[17] teachers were also given a spare pair of spectacles but had no other responsibility with regard to spectacle wear. In the first study,[20] at follow-up, 11.2% of students reported that their spectacles were broken, and 2.7% reported that they were lost. Eighty percent of students in the second study[17] reported that their spectacles were broken or lost. This suggests that supplying a spare pair of spectacles via teachers can help to address nonwear, but the engagement of teachers is also important.

In our study, girls were more likely to express parental disapproval as a reason for nonwear than boys, which has been reported in other studies,[19,23,29,34,36,38,39] as well as 2 studies[18,40] in India. In the studies from India, parents were concerned that wearing spectacles would adversely affect the marriage prospects of their daughters[18] and that girls would be "singled out" for wearing spectacles.[40] Unpublished data (P.M., July 2017) from another study[41] undertaken in India provide an explanation for these views because parents considered that spectacle wear implied a disability. Therefore, parents in India are more likely to stop girls from wearing spectacles and have greater anxiety about them wearing spectacles.[42]

Seven students herein reported nonwear because of headache or because spectacles felt uncomfortable. All of the students reporting headache underwent refraction again, and only 1 required a modified prescription. The other students had their spectacle frame adjusted and were satisfied. Only 1 student reported not wearing spectacles because of no perceived benefit of spectacles (presenting VA of 6/24; corrected VA of 6/18), which likely reflects the presenting VA. Several studies from different regions of the world have also reported no perceived benefit as a reason for nonwear, varying from 2.4% in the United States[17] to 8.7% in Mexico[19] to 25.6% in Saudi Arabia.[36]

In our study, only 1 child reported that he or she did not like the appearance of spectacles as a reason for nonwear, which is in contrast to many other studies[16,17,19,29,34-36] undertaken in a range of high-, middle-, and low-income settings, including India. Herein, a range of different metal and plastic colored frames was offered for students to choose from. This highlights the importance of giving students the opportunity to decide what they want to wear.

### Limitations and Implications for Programs

Our study has some limitations. We did not ask students who were wearing their spectacles why this was the case. Therefore, we are not able to confirm that those children who wore their spectacles did so because they perceived a visual benefit. This would be of benefit, providing insights that could be used in health education. Another limitation was that we were not able to have in-depth discussions with the students about reasons they gave for nonwear. For further studies, it would be beneficial to explore the attitudes of parents and the role they could have in influencing spectacle wear, particularly among girls. This will ensure that relevant and appropriate messages are sent to parents of students who require spectacles. Our study highlights the importance of building culturally relevant and sex norms within any intervention. There are examples of this from other interventions in India from HIV research,[43] where the authors recommended preliminary qualitative research to influence and guide the intervention strategies.

To date and to our knowledge, only 2 other studies[24,31] have reported the use of prescribing guidelines in school programs, and most programs prescribe on the basis of the degree of RE. The use of improvement in VA in the better eye means that students are likely to perceive an improvement in their vision when wearing their spectacles. This guideline also reduces unnecessary costs to programs and parents. However, it is important to ensure that the decision to prescribe spectacles is based on the improvement in visual function of a child.

## Conclusions

Three-quarters of students receiving spectacles were wearing them at follow-up, which supports the use of the prescribing guidelines applied in this trial. Programs for the correction of REs in school students should address the most important reasons for nonadherence with spectacle wear. In our study, adherence might have improved by increasing awareness of the benefits of spectacle wear among teachers and parents and by giving a spare pair of spectacles to classroom teachers and asking them to encourage spectacle wear. Interventions to reduce teasing and bullying and disapproval among parents, particularly of girls, is more challenging because interventions would need to address societal norms and attitudes.


### ARTICLE INFORMATION

**Accepted for Publication:** December 4, 2018.

**Published Online:** January 31, 2019. doi:10.1001/jamaophthalmol.2018.6906

**Open Access:** This article is published under the JN-OA license and is free to read on the day of publication.

**Author Contributions:** Dr Morjaria had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.
*Concept and design:* All authors.
*Acquisition, analysis, or interpretation of data:* All authors.
*Drafting of the manuscript:* All authors.
*Critical revision of the manuscript for important intellectual content:* All authors.
*Statistical analysis:* Morjaria, Evans.
*Obtained funding:* Morjaria, Gilbert.
*Administrative, technical, or material support:* Morjaria.
*Supervision:* Morjaria, Gilbert.

**Conflict of Interest Disclosures:** None reported.

**Funding/Support:** This study was supported by L'Occitane Foundation (Prof Gilbert) and the Vision Impact Institute (Dr Morjaria).

**Role of the Funder/Sponsor:** The funding sources had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

**Additional Contributions:** We thank the staff of Sankara Eye Hospital, Bangalore, India.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