Parent strategies for improving compliance with eyeglass wear in young children

Erin M. Harvey, PhD,[1] Divya Ramesh, MSc,[1] Maria Sandra Marshall, RN, PhD,[1] Jenifer A. Martin, BPH,[1] Eileen R. McGrath, PhD,[2] Selenne Yescas, BS, BA,[1] and Joseph M. Miller, MD, MPH[1]*

Downloaded from http://journals.lww.com/optvissci by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC1y0abggQZXdgGj2MwlZLeI= on 08/13/2024

SIGNIFICANCE: Results of this study provide preliminary data on parent strategies for improving compliance with eyeglass treatment in young children, an age group for which previous data are limited. Parent responses provide important insights to support parents of young children who wear eyeglasses and provide preliminary data to guide additional research.

PURPOSE: The goal of this exploratory study was to learn more about parents' strategies to improve compliance with eyeglass treatment of young children.

METHODS: An online survey of parents of 1-year-old to less than 5-year-old children who wear eyeglasses was conducted. Parents indicated whether they used various strategies to encourage wear and were asked to provide advice for parents of young children recently prescribed eyeglasses. Use of various strategies by age was determined. Open-ended responses regarding advice for other parents were analyzed using qualitative content analysis.

RESULTS: The final sample included 104 parents who were predominantly White (81%), non-Hispanic (76%), and college graduates (68%). During the 2 weeks prior to survey completion, 74% of parents reported their child wore their eyeglasses ≥8 hours/day. Use of strategies for improving eyeglass wear varied by child age. The most frequent recommendations that parents provided for other parents were to be consistent in encouraging wear, use social modeling, provide positive reinforcement when the eyeglasses are worn, and ensure that the eyeglasses fit well and were comfortable.

CONCLUSIONS: Parents provided many useful insights into their experiences. However, results may not be broadly generalizable, because of the limited diversity and high rate of compliance in the study sample. Further research with more diverse populations and research on effectiveness of various strategies to increase compliance in this age group are recommended to support eyeglass treatment compliance in young children.

(*Optom Vis Sci* 2024;101:187–194)

[1]Department of Ophthalmology and Vision Science, University of Arizona College of Medicine, Tucson, Arizona [2]Department of Pediatrics, University of Arizona College of Medicine, Tucson, Arizona *emharvey@arizona.edu

Submitted: August 29, 2023
Accepted: March 7, 2024
Funding/Support: NIH/NEI (UG1EY029657; to EMH).
Conflict of Interest Disclosure: None of the authors have reported a financial conflict of interest.
Author Contributions: Conceptualization: EMH, DR, MSM, JAM, SY, JMM; Formal Analysis: EMH, DR, MSM, JAM; Funding Acquisition: EMH; Investigation: EMH, DR, MSM, JAM, ERM, SY, JMM; Methodology: EMH, DR, MSM, JAM, ERM, SY, JMM; Project Administration: EMH, DR; Supervision: EMH; Writing – Original Draft: EMH; Writing – Review & Editing: DR, MSM, JAM, ERM, SY, JMM.
Supplemental Digital Content: Direct URL links are provided within the text.
Copyright © 2024 American Academy of Optometry
ISSN: 1040-5488/24/10104–0187
DOI: 10.1097/OPX.0000000000002123

Advances in pediatric vision screening over the past several decades now allow for instrument-based screening for amblyopia risk factors (e.g., strabismus, anisometropia, refractive errors) in children as young as 12 months of age. Despite these improvements in our ability to identify refractive errors in very young children, there are few studies in the literature on compliance with eyeglass treatment in children younger than 5 years.[1–5] For children in this age range, treatment compliance depends largely upon the actions of the child's parent or other caregivers and requires different strategies for encouraging eyeglass wear, compared with treatment in older school-age children.

We conducted an exploratory online survey of parents of young children who wear eyeglasses to learn more about parents' experiences, challenges, and successes with their child's eyeglass treatment in preparation for a randomized clinical trial of eyeglass wear in toddlers (Spectacle Prescribing in Early Childhood Study). This report focuses on parent strategies to encourage eyeglass wear. Data from this report provide helpful information to support parents of young children who wear eyeglasses and provide preliminary data to guide future research.

METHODS

This study complied with the Declaration of Helsinki, was approved by the University of Arizona institutional review board (IRB), and met the requirements of the U.S. Health Insurance Portability and Privacy Act. Informed consent was obtained prior to participation through an IRB-approved consent form that preceded the survey.

Subjects: Inclusion criteria and recruitment strategy

The study was conducted from October 2020 to May 2021. Parents or guardians with a 1-year-old to less than 5-year-old child who wears eyeglasses willing to complete an online survey that included taking submitting a photograph of their child's eyeglasses were eligible to participate. The target sample size for the study was 100 parents.

Recruitment efforts included IRB-approved posts to parenting blogs, social media parent groups, pediatric eyeglass- and vision-related informational websites, a website for parents who want to participate in research with their children, and e-mail listservs directed toward parents of young children or parents of children with eyeglasses. The recruitment materials directed potential participants to contact the study team via e-mail, website contact form, or phone call. If parents indicated that they were interested and eligible to participate, the study team e-mailed them a unique link to the survey. Parents who did not complete the survey after 7 to 10 days were sent up to three reminder e-mails. Upon completing the survey, parents received a $20 gift card via e-mail for their time and effort.

Survey development

The survey included sections on parent and child demographics; child's ophthalmic history, eyeglass wear, and temperament; parent observations on their child's development after receiving

Copyright © American Academy of Optometry. Unauthorized reproduction of this article is prohibited.

Downloaded from http://journals.lww.com/optvissci by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC1y0abggQZXdgGj2MwlZLeI= on 08/13/2024

eyeglasses; parent strategies to improve child's eyeglass wear; and the impact of challenges related to the coronavirus disease 2019 (COVID-19) pandemic on child's eyeglass wear. Parents were also asked to take a digital photo of their child's eyeglasses and either upload the photo within the survey or e-mail it to the study team. The photo of the child's eyeglasses was used to confirm the parent's response to a question asking for the reason for their child's eyeglass wear (type of refractive error) (see Appendix, for survey, including photo-taking instructions and scoring methods, available at http://links.lww.com/OPX/A719).[6]

The present report focuses on parent responses to questions regarding strategies to encourage compliance with eyeglass wear. The 16 strategies included in the multiple-choice questions were based on input from the research team and other colleagues who provide pediatric care (optometrists, pediatric ophthalmologists, psychologists, nurse) and a review of informational websites and parent blogs on eyeglass treatment in young children. An open-ended question asking parents what advice they would give to other parents who have a child recently prescribed eyeglasses about how to encourage their child to wear the eyeglasses was included to elicit additional strategies and recommendations not included in multiple-choice questions.

The research team developed the survey and considered the wording, sequencing, and response formats of the survey questions. University of Arizona experts in user experience design, survey information architecture, usability testing, and web content accessibility guidelines (WCAG 2.2) conducted usability tests and guided content accessibility tests. Finally, a convenience sample of five parents of children with eye glasses completed the survey and provided feedback on survey flow, usability, and length; item comprehension; and ease of photo-taking and uploading instructions. The survey was administered using Qualtrics Software (Qualtrics, Provo, UT).

Statistical analysis

Data validation

The final analysis included survey results from parents who completed the survey and submitted a valid eyeglass photo. Eyeglass photos were considered valid if the parent attempted to follow the photo instructions, regardless of the quality of the photo.

Parents were asked their child's date of birth on two separate questions to validate and verify eligibility. Parents were also asked their child's age at their first eyeglass wear and the month/year that their child first wore eyeglasses. When the two responses were inconsistent, open text responses were reviewed for clarifying information, and where appropriate, the open text response was used. In instances where the responses were inconsistent but similar (difference, ≤6 months), the median of the two values in terms of child's age at first eyeglass prescription was used. When responses differed by more than 6 months, age at first wear was coded as missing.

Data analysis

Descriptive statistics were used to summarize parent and child demographics, child's ophthalmic history, child's frequency of eyeglass wear (during the first month after initial dispensing, during the 2 weeks prior to completion of the survey), and impact of challenges related to the COVID-19 pandemic on child's eyeglass treatment. The Mantel-Haenszel test of trend was used to assess the

TABLE 1. Description of final sample (n = 104): Family and child demographics

Variable	Response	n	Percentage
Identity of individual completing survey (n = 104)	Child's mother	99	95%
	Child's father	4	4%
	Child's legal guardian	1	1%
Education of individual completing survey (n = 104)	High school or GED diploma	9	8.7%
	Some college/technical school	24	23.1%
	Bachelor's degree or higher	71	68.3%
Other parent's education (n = 104)	Less than high school/GED	6	5.8%
	High school or GED diploma	15	14.4%
	Some college/technical school	23	22.1%
	Bachelor's degree or higher	58	55.8%
	Does not apply	1	1.0%
	Prefer not to answer	1	1.0%
Child age (months, n = 102)	12 to 23 months	11	10.6%
	24 to 35 months	18	17.3%
	36 to 47 months	36	34.6%
	48 to 60 Months	37	35.6%
Child sex (n = 104)	Female	57	54.8%
	Male	47	45.2%
Child race (n = 104*)	Native American/Alaska Native	6	5.8%
	Black/African American	4	3.8%
	Asian	5	4.8%
	White	84	80.8%
	Prefer not to answer	8	7.7%
Child ethnicity (n = 104)	Hispanic	22	21.2%
	Non-Hispanic	79	76.0%
	Prefer not to answer	3	2.9%

*Three parents responded with two races (Asian and White [n = 2], Black and White [n = 1]).

© 2024 American Academy of Optometry

Copyright © American Academy of Optometry. Unauthorized reproduction of this article is prohibited.

Downloaded from http://journals.lww.com/optvissci by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC1y0abggQZXdgGj2MwlZLeI= on 08/13/2024

linear relation between child's age at initial eyeglass wear and length of time it took for the child to get used to wearing the eyeglasses.

Parent responses to multiple-choice questions regarding the use of 16 strategies to increase their child's eyeglass wear during the month after initial dispensing of the eyeglasses were summarized by overall percentage of parents using each strategy and by child age at initial dispensing. Responses to an open-ended survey question that asked parents what advice they would give to other parents who have a child recently prescribed eyeglasses about how to encourage their child to wear their eyeglasses were analyzed using qualitative content analysis. Details of the analysis steps are summarized below:

Step 1: Parent open-ended text responses were independently reviewed by two study team members (D.R. and J.A.M.). They each extracted individual parent recommendations from responses using the following guidelines:

Review each parent's text response independently. Without interpreting/coding the parent responses, extract verbatim all sentence fragments or salient parts of responses that contain the following:

1. Recommendations, strategies, or suggestions to promote compliance with eyeglass wear
2. Strategies that do not work to promote compliance with eyeglass wear

They then met to compare their lists and reach agreement on a final list of recommendations extracted from each parent's response.

Step 2: The two study team members who completed step 1 each developed a preliminary list of codes and code definitions for the eyeglass wear compliance strategies extracted in step 1. They then met to ensure consistency of code assignments to each response with one another and to clarity codes and definitions.

Step 3: Four study team members (MSM, EMH., DR, and JAM) met to review parent recommendations (extracted in step 1) alongside codes and definitions assigned to each recommendation (step 2). The team collectively reconsidered, assigned, and regrouped codes as needed to reach a consensus on the final list of distinct recommendations emerging from parent responses.

Step 4: Frequencies of final recommendation codes (from step 3) were summarized.

RESULTS

Survey links were sent to 164 individuals who expressed interest and indicated they met the eligibility criteria, and 116 (71%) submitted at least partial survey responses. Survey responses from 12 individuals were excluded for the following reasons: survey complete but no eyeglass photo submitted (n = 5), survey incomplete and no eyeglass photo submitted (n = 4), child too old (n = 1), submitted clipart eyeglass image instead of eyeglass photo (n = 1), and submitted example eyeglass photo from survey as child's eyeglass photo (n = 1).

The final sample for analysis included survey responses from 104 parents. Two parents provided inconsistent responses for their child's birth year (2016 vs. 2017, 2018 vs. 2019), and their data were excluded from analyses that included the child's age at the time of survey completion. Responses from 14 parents who had inconsistent responses or

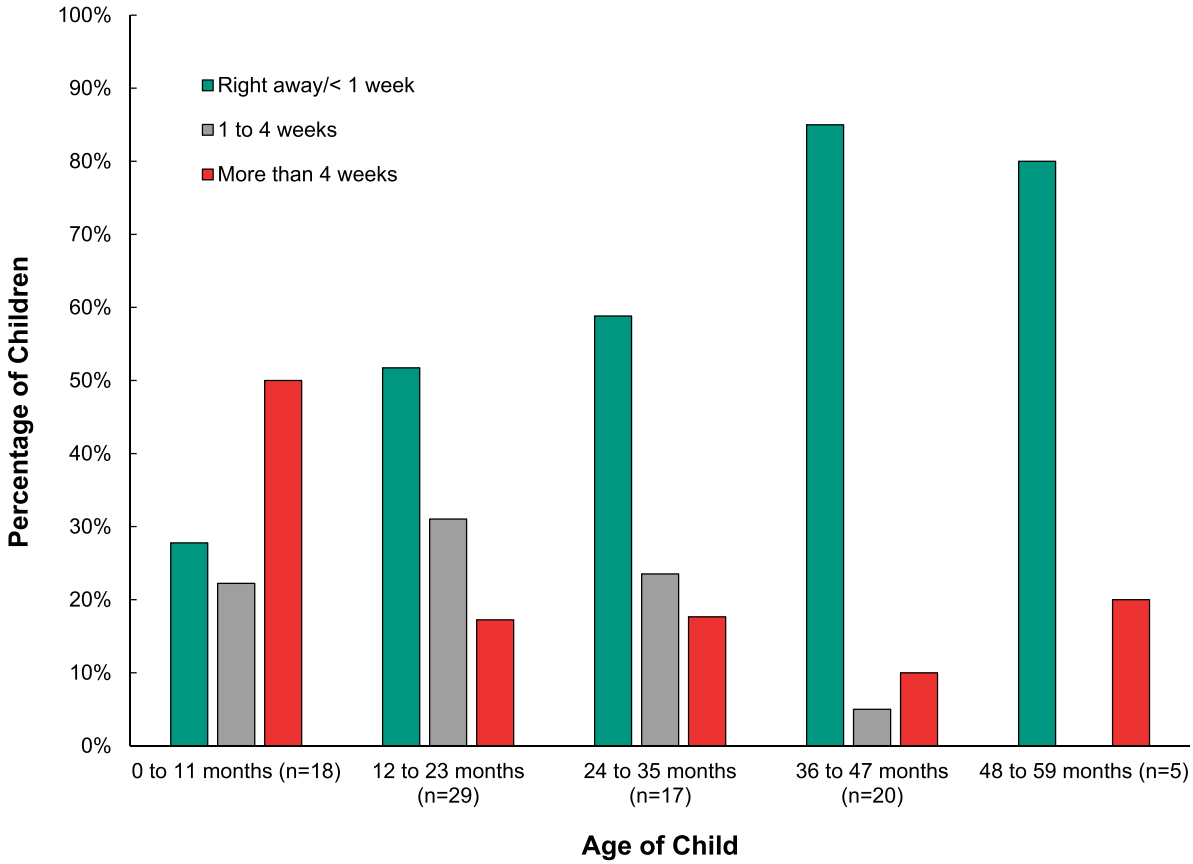

FIGURE 1. Parent reports of the amount of time it took their child to get used to wearing first pair of eyeglasses by child's age at dispensing of first eyeglasses (n = 89, excluding children with missing data on the age at first wear and 1 child who had their eyeglasses <1 week at the time of survey completion).

Copyright © American Academy of Optometry. Unauthorized reproduction of this article is prohibited.

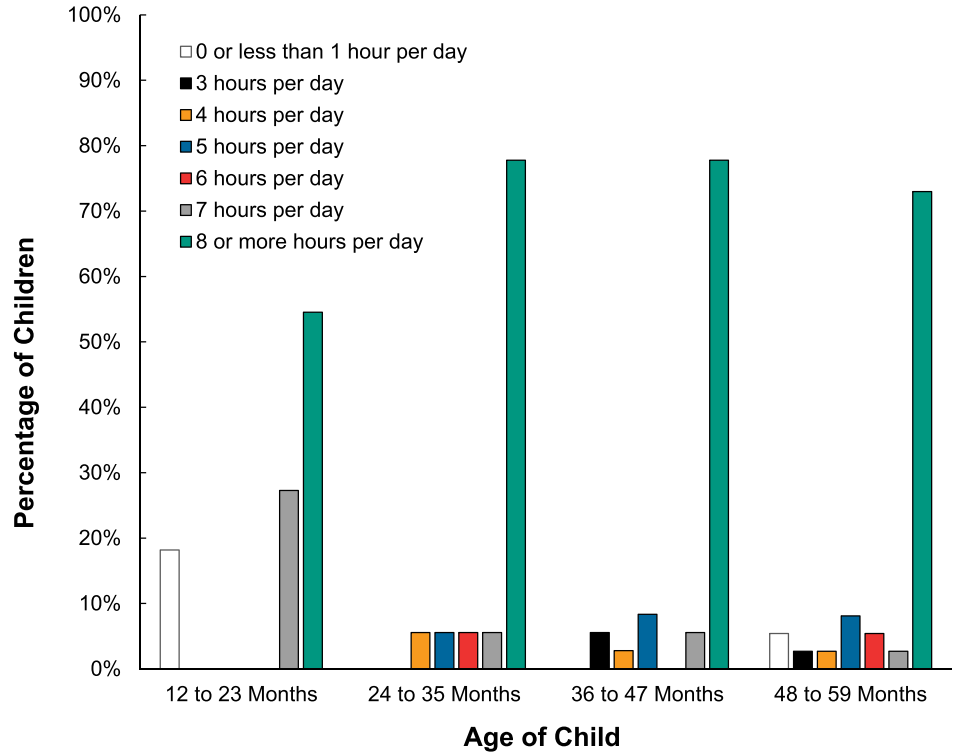

FIGURE 2. Frequency of eyeglass wear in 2 weeks prior to survey completion (n = 102).

Downloaded from http://journals.lww.com/optvissci by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC1y0abggQZXdgGj2MwlZLeI= on 08/13/2024

missing data for child's age at first eyeglass wear were excluded from analysis that included the child's age at first eyeglass wear.

Sample description

A summary of the demographic characteristics of the final sample is provided in Table 1. The mean age of children at the time the survey was completed was 41.44 months (standard deviation, 12.78; n = 102). The median local income (zip-code based, per U.S. Census) for participants ($75,516; standard deviation, $28,106; n = 103) was higher than the median U.S. income of $64,994.[7]

The most common refractive error reported and confirmed by photo analysis was hyperopia (either reported alone or in addition to other refractive errors) (45/104, 43%), followed by astigmatism (28/104, 27%), anisometropia (12/104, 12%), and myopia (9/104, 9%). Refractive error type was either not reported or not consistent with photo analysis for 24 children. Half of the children (52/104, 50%) had an ophthalmic condition in addition to refractive error. The most common conditions reported were strabismus (41/104, 39%), retinopathy of prematurity (3/104, 3%), and optic nerve defect (3/104, 3%). Nystagmus, congenital third nerve palsy, coloboma, familial exudative vitreoretinopathy, incontinentia pigmenti, microphthalmia, morning glory anomaly, corneal scar, ptosis, and persistent pupillary membrane were also reported (for each condition, 1/104; 1%). Some children had more than one of these conditions. Most children received no treatment other than eyeglasses (62/104, 60%). Reported treatments in addition to eyeglass wear were patching (37/104, 36%), atropine (9/104, 9%), surgery (8/104, 8%), laser (4/104, 4%), and injections (3/104, 3%), with some parents reporting more than one type of additional treatment.

Eyeglass wear

Most children (100/104, 96%) were prescribed eyeglasses for "full-time wear," with only three parents reporting their child was prescribed less than full-time wear (6 hours/day; at least 50% of the time; when reading). Fig. 1 summarizes the parent's reports of length of time it took their child to adjust to wearing their first pair of eyeglasses by the child's age at first wear. Mantel-Haenszel test of trend indicated a significant linear trend between age at initial eyeglass wear and length of time it took for the child to adjust to wearing the eyeglasses (χ^2 [Mantel-Haenszel], 12.439; $p<0.001$), indicating slower adjustment for younger children.

For the 2 weeks prior to survey participation, 9.6% (10/104) of parents reported that their child had worn the eyeglasses 0 to 4 hours/day, and 94.4% (94/104) reported that their child had worn them more than 4 hours/day. Most parents reported that their child had worn their eyeglasses for 8 or more hours per day (77/104, 74%). The three children prescribed eyeglasses for less than full-time wear had worn them for 0, 4, and 8 hours/day. Fig. 2 summarizes wear during the 2 weeks prior to survey participation by the child's age at the time of survey participation.

Parent strategies for encouraging eyeglass wear

Parents were asked, in multiple-choice format, to report if they used each of 16 strategies to increase their child's eyeglass wear during the month after initial dispensing of the eyeglasses. Table 2 summarizes the strategies and the percentage of parents who reported using each strategy for the overall sample and by child age at initial eyeglass dispensing, per parent report.

Parents also responded to the following open-ended question: "What advice would you give to parents who have a child recently prescribed eyeglasses about how to encourage their child to wear their eyeglasses?" A summary of results from the content analysis and example responses from parents is provided in Table 3.

Impact of COVID-19

Because this study was conducted during the first and second year of the COVID-19 pandemic, the survey included questions

© 2024 American Academy of Optometry

Copyright © American Academy of Optometry. Unauthorized reproduction of this article is prohibited.

TABLE 2. The percentage of parents reporting they used each of 16 strategies to encourage their child's eyeglass wear during the child's first month of eyeglass treatment

Strategy	Overall sample	0 to 11 months	12 to 23 months	24 to 35 months	36 to 47 months	48 to 59 months
I made sure that the eyeglasses fit comfortably on my child and made sure that they were put on properly.	100.0%	100%	100%	100%	100%	100%
I praised my child when he/she wore the eyeglasses.	95.2%	83%	97%	100%	95%	100%
I tried to be consistent in reminding my child to wear his/her eyeglasses.	92.3%	83%	93%	82%	95%	100%
I wore my own eyeglasses or helped my child notice friends or characters who wore eyeglasses too.	86.5%	50%	97%	94%	86%	100%
Explain why glasses help	74.0%	39%	79%	76%	90%	100%
When my child resisted wearing the eyeglasses, I put them away and tried again later when my child was in a better mood or when I was feeling more patient.	65.4%	89%	83%	59%	38%	20%
I asked family and/or friends to help encourage my child to wear his/her eyeglasses.	65.4%	56%	72%	76%	57%	40%
I distracted my child with another activity after I put the eyeglasses on so that he/she would not remove them.	64.4%	94%	76%	59%	29%	20%
I played a game with my child, watched a TV show or movie with my child, or read a book with my child that was related to eyeglasses to encourage my child to wear the eyeglasses.	60.6%	61%	69%	71%	33%	60%
I let my child choose the style of glasses (frame, color, pattern, etc.) that he/she liked best.	48.1%	11%	31%	53%	71%	100%
I required my child to wear eyeglasses during some of his/her favorite activities so that my child saw the eyeglasses as special and fun.	46.2%	44%	66%	29%	24%	40%
I rewarded my child with a fun activity, treat, stickers, etc., if my child wore the eyeglasses.	42.3%	39%	45%	47%	29%	40%
I encouraged my child to take care of the eyeglasses by making it his/her responsibility to put them away or clean them.	39.4%	6%	24%	29%	62%	100%
I talked to my child about the reasons why he/she needed to wear eyeglasses and gave examples.	39.4%	28%	34%	53%	38%	40%
I gave my child a consequence or put him/her in time-out if he/she refused to wear the eyeglasses.	13.5%	6%	17%	6%	5%	40%
I used a reward chart to keep track of and to encourage my child's eyeglass wear so that he/she could see how well he/she was doing and stay motivated.	8.7%	17%	10%	0%	5%	0%

Results are included for the overall sample (n = 104) and by child age at the time of initial eyeglass dispensing for children whose parent provided information on age at initial dispensing (0 to 11 months [n = 18], 12 to 23 months [n = 29], 24 to 35 months [n = 17], 36 to 47 months [n = 21], and 48 to 59 months [n = 5]).

about how changes related to the pandemic influenced their child's eyeglass treatment and screen-use time (Table 4). Most parents (83%) reported no change in their child's eyeglass wear before versus during the COVID pandemic (before vs. after March 2020), and the most common pandemic-related stressors that affected the child's eyeglass wear were changes in the child's routine and increase childcare/education responsibilities for the parent. A within-subjects analysis comparing screen time before versus during the COVID pandemic indicated that 58% (60/104) reported no change, 41% (43/104) reported an increase in screen time, and 1% (1/104) reported a decrease in screen time.

DISCUSSION

The goal of this exploratory study was to learn more about parents' strategies to improve compliance with their child's eyeglass treatment. Parents provided many insights into their experiences. However, it should be noted that demographic data suggest that results may not be broadly generalizable. Most children were White (81%) and non-Hispanic (76%) and at the older end of the inclusion age range (36 to 48 months of age, 70%). Most parents completing the survey were mothers (95%) and had a college degree (68%).

The most common reasons for eyeglass correction in our sample were hyperopia (43%) and astigmatism (27%). The distribution of refractive errors in our sample is consistent with refractive error prevalence rates from population-based studies of children in this age range. For example, the Multi-Ethnic Pediatric Eye Disease Study reported that for non-Hispanic White children, the prevalence rates for hyperopia, astigmatism, and myopia were 25.65%, 6.33%, and 1.20%, respectively.[8]

Eyeglass wear reports suggested that initial adjustment to eyeglass wear occurred more quickly in older children, with the majority of infants requiring more than 4 weeks and the majority of 1-, 2-, 3-, and 4-year-old children adjusting to eyeglass wear within a week (Fig. 1). Recent eyeglass wear was high in our sample (74% reported their child wearing the eyeglasses at least 8 hours per day in the 2 weeks prior to survey participation).

The high rate of compliance in our sample is consistent with a recent report of eyeglass wear in 3- to 5-year-old Head Start participants who received eye examinations and eyeglasses through a school-based program in which 71% of children wore their eyeglasses consistently over the course of the school year, per teacher reports.[5] A study of younger children (12 to <36 month olds) who received a free eye examination and eyeglasses through a research

Downloaded from http://journals.lww.com/optvissci by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC1y0abggQZXdgGj2MwlZLeI= on 08/13/2024

Copyright © American Academy of Optometry. Unauthorized reproduction of this article is prohibited.

TABLE 3. Summary of strategies recommended and examples of parent responses provided in open ended responses to the question: "What advice would you give to parents who have a child recently prescribed eyeglasses about how to encourage their child to wear their eyeglasses?"

Strategy	Examples	n	%
Be consistent	"Creating habit around glasses, build them into your morning and bedtime routines." "For us what has worked is making sure to put them on as soon as he wakes up in the morning and from naps etc. and to be consistent."	36	38%
Social modeling	"My husband and I both wear glasses so I think this makes it more normal for my child." "I also had any family members who wore glasses to Facetime/send pictures of themselves to welcome him "into the club" the day we got the glasses." "… books with characters who wore glasses, or books about needing glasses were incredibly helpful."	22	23%
Positive reinforcement	"Give positive feedback when they wear them." "Praise from us and praise from others worked great." "Rewards and high fives makes them happy."	19	20%
Good eyeglass fit	"First make sure your child is in the right size/shape glasses." "A good fit is key in getting little ones to wear their glasses without much of a fuss."	17	18%
Be persistent	"No matter how many times he took them off, we would put them back on (after a short break if needed)." "I put them on him. When he tossed them, I put them back on."	14	15%
Be positive	"If anyone commented on her glasses, we would frame or reframe as a compliment." "I tried very hard to have no negative connotations with them."	14	15%
Set rule or expectation	"We have a rule that glasses are on unless she is in bed." "'On your face or in the case' has been a quick and easy way for us to teach her to take care of them at an age appropriate level."	12	13%
Be patient	"Be patient! It's a learning curve for everyone and every child is different. Have parents take turns trying if you're having a hard time getting the glasses on. Sometimes a fresh perspective can make things easier."	11	12%
Distract child's attention from eyeglasses	"Try to keep your child busy.. activities, snacks, going outside to play, anything to keep their mind off of the glasses ..." "Distract, distract, distract"	11	12%
Take a break from wear	"When our son would get frustrated we would take a 10/15 minute break and then try again."	11	12%
Do not force or punish	"Don't insist or get nervous if the child doesn't keep his glasses on. Wait, redirect his attention and try again in 5 minutes." "…be patient if you have a stubborn child like mine, you can't force them it will set you back."	10	11%
Educate child/explain why	"Even before he could talk we would always talk to him and tell him what's going on why he needs glasses and we always tried to make it a positive thing."	9	10%
Involve child/promote child agency	"Let the child pick out their favorite frames." "She really enjoys cleaning her own glasses…"	8	9%
Don't draw too much attention to the eyeglasses	"To not focus too much on the change, make it seem natural and okay." "Be positive, but not overly enthusiastic or obnoxious because in my experience, making them such a big deal has actually backfired."	7	7%
Do what works for your child	"It depends on what motivates the particular child. A child who is reward-motivated may do well with a reward chart. A child who is praise-motivated might do well when others (family, teachers, neighbors) get excited about his/her glasses."	6	6%
Enlist social support	"…encourage friends and family to encourage child.. " "We asked family and friends not to comment on her glasses as it seemed to remind her that she had them on and always takes them off immediately."	6	6%
Bribe	"Bribery has also worked - special treats for putting on his glasses or if he wants to go play out on the deck or ride his bike he needs to put on his glasses."	5	5%
Build up wear time gradually	"Ease them into wearing them a little bit at a time. They will adjust and eventually wear them all the time."	5	5%
Be kind but firm	"Always be consistent and if they take them off kindly put them back on and say we have to wear our glasses." "Being consistent, kind but firm made him realize they were a part of his daily routine."	4	4%
Avoid loss of eyeglasses	"…we have designated safe spots (table or counter) to put them if she takes them off to avoid losing or breaking them." "Have a backup pair!"	3	3%
Reminders	"He will look for any opportunity to "forget" to wear his glasses, but will usually put them on once he's reminded."	3	3%

study found that these children were less compliant, with just 36% wearing the eyeglasses frequently (at least 6 hours per day), per parent report.[2] However, comparison of compliance rates across studies is complicated by differences in study samples (e.g., sampling methods, type and magnitude of refractive errors, socioeconomic factors) and by differences in how compliance is measured. Many

© 2024 American Academy of Optometry

Copyright © American Academy of Optometry. Unauthorized reproduction of this article is prohibited.

Downloaded from http://journals.lww.com/optvissci by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC1y0abggQZXdgGj2MwlZLeI= on 08/13/2024

TABLE 4. COVID-19 pandemic: Impact on child's eyeglass wear and screen time

Question	Response	n	%
Change in wear since March 2020 (n = 104)	Wears them less	8	7.7%
	About the same	86	82.7%
	Wears them more	10	9.6%
Screen time before March 2020* (n = 104)	<2 hours	65	62.5%
	2 to <4	33	31.7%
	4 to <6	4	3.8%
	6 or more	2	1.9%
Screen time after March 2020* (n = 104)	<2 hours	39	37.5%
	2 to <4	37	35.6%
	4 to <6	20	19.2%
	6 or more	8	7.7%
COVID-19 pandemic–related stressors that affect child's wear	Change in child's routine	33	31.7%
	Increase childcare/education responsibilities	24	23.1%
	Anxiety or depression (self or family member)	20	19.2%
	Difficulty accessing eye care or purchasing eyeglasses	17	16.3%
	Financial/employment problems	8	7.7%
	None of the above	56	53.8%

*Within-subjects comparison of screen time before versus after March 2020 indicated 58% (60/104) reporting no change, 41% (43/104) reporting an increase, and 1% (1/104) reporting a decrease.

Downloaded from http://journals.lww.com/optvissci by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC1y0abggQZXdgGj2MwlZLeI= on 08/13/2024

parents were recruited for participation through online resources for parents of young children who wear eyeglasses. Thus, the high rate of compliance in our sample may be due in part to our recruitment strategy, which included parents who were engaged in their child's treatment and were seeking and sharing information about eyeglasses wear in young children.

Results suggest that, in this age range, use of various strategies for helping young children adjust to eyeglass wear is age-dependent (Table 2), likely because of the physical and cognitive development and learning that occur in children within our study age range. This suggests that support and recommendations for parents of young children prescribed eyeglasses should be tailored for the individual child's level of development to be most helpful for parents.

Parents provided thoughtful and potentially useful advice and examples for other parents (Table 3). The most frequent recommendations were to be consistent in encouraging eyeglass wear, use social modeling (e.g., have family/friends wear eyeglasses, provide books/movies/toys with characters who wear eyeglasses), provide positive reinforcement when the eye glasses are worn (encouragement, praise, rewards), and ensure that the child's eyeglasses fit well and are comfortable. In a recent study of parent perspectives on eyeglass treatment compliance in preschool-aged children, parents also stressed the importance of proper eyeglass fit and comfort for achieving good treatment compliance.[4]

Lastly, the survey asked parents about the impact of challenges related to the COVID-19 pandemic on their child's eyeglass wear and screen use. Most parents (83%) reported that their child wore their eyeglasses about the same amount of time before and after the start of pandemic. However, responses to questions about pandemic-related stressors and their child's screen use suggest that the pandemic did influence parent and child behaviors related to eyeglass treatment for some families. Some parents reported changes in the child's routine (32%) and an increase in parents' childcare or education responsibilities (23%) affecting their child's eyeglass wear, and 41% reported an increase in their child's use of screens.

Limitations

The present report provides novel insights from parents on strategies to encourage eyeglass wear in young children. However, limitations of the present study include the lack of diversity of the study sample, the high rate of eyeglass wear compliance across children (likely due in part to sampling methods in which many parents were recruited through online resources for parents of children with eyeglasses), the retrospective design of the study that relied on parents' recall of strategies used early in treatment, and the fact that the survey was conducted in part during the first year of the COVID-19 pandemic (which may have influenced compliance and strategies used).

CONCLUSIONS

Previous research has focused primarily on eyeglass wear in school-age children. The present study provides important preliminary data on eyeglass treatment and compliance in a less-studied age group, children under 5 years of age. The primary findings of this report include the following:

- In young children, strategies parents used during the first month of eyeglass treatment to support their child's eyeglass treatment compliance varied by the age at which eyeglasses were first prescribed. Support and recommendations for parents should be tailored for the individual child's level of development.
- The most frequently recommended strategies to increase eyeglass wear were to be consistent in encouraging wear, use social modeling, provide positive reinforcement when the eye glasses are worn, and ensure that the child's eyeglasses fit well and are comfortable.

In young children, treatment compliance is dependent on parents and caregivers, and there are few existing data on successful strategies for achieving compliance with eyeglass wear for children in this age range. Parents offered many useful age-appropriate recommendations and examples for other parents. This is important and useful information to provide to parents of young patients when prescribing eyeglasses. To provide further support for parents and to improve compliance and effectiveness of eyeglass treatment in young children, we recommend further studies with more diverse populations representing a broader range of compliance levels with

Copyright © American Academy of Optometry. Unauthorized reproduction of this article is prohibited.

eyeglass wear and studies using prospective methods to better understand the effectiveness of various strategies to support eyeglass treatment compliance in very young children.

REFERENCES

1. Dhirar N, Dudeja S, Duggal M, et al. Compliance to spectacle use in children with refractive errors—A systematic review and meta-analysis. *BMC Ophthalmol* 2020;20:71.
2. Harvey EM, Miller JM, Davis AL, et al. Spectacle wear in toddlers: Frequency of wear and impact of treatment on the child and family. *Transl Vis Sci Technol* 2018;7:43.
3. Horwood AM. Compliance with first time spectacle wear in children under eight years of age. *Eye (Lond)* 1998;12(Pt. 2):173–8.
4. Perez S, Sabharwal S, Nakayoshi A, et al. Parental perspectives on factors influencing eyeglass wear compliance in preschoolers from low-income families in San Francisco. *J AAPOS* 2022;26:183.e1–6.
5. Sabharwal S, Nakayoshi A, Lees CR, et al. Prevalence and factors associated with eyeglass wear compliance among preschoolers from low-income families in San Francisco, California. *JAMA Ophthalmol* 2021;139:433–40.
6. Miller J, Schwiegerling J, Harvey E. Telemedicine lensometry: Determination of spectacle prescription by analysis of cell phone images of coins through spectacle lenses. In: Haller JA, Meiler WF, Blomquist PH, et al, eds. The American Ophthalmological Society 158th Annual Meeting Program Book. 2022. Available at: https://www.aosonline.org/assets/Annual-Meeting/Program-Books/AOS-AM22-Program-Book.pdf. Accessed March 8, 2024.
7. U.S. Census Bureau. American Community Survey, 2016–2020 American Community Survey 5-Year Estimates, Table S1901: Income in the past 12 months (in 2020 inflation-adjusted dollars). Available at: https://data.census.gov/table/ACSST5Y2020.S1901?g=2500000US7655. Accessed March 8, 2024.
8. Wen G, Tarczy-Hornoch K, McKean-Cowdin R, et al. Prevalence of myopia, hyperopia, and astigmatism in non-Hispanic White and Asian children: Multi-ethnic Pediatric Eye Disease Study. *Ophthalmology* 2013;120:2109–16.

Downloaded from http://journals.lww.com/optvissci by BhDMf5ePHKav1zEoum1tQfN4a+kJLhEZgbsIHo4XMi0hCywCX1AWnYQp/IlQrHD3i3D0OdRyi7TvSFl4Cf3VC1y0abggQZXdgGj2MwlZLeI= on 08/13/2024

© 2024 American Academy of Optometry

Copyright © American Academy of Optometry. Unauthorized reproduction of this article is prohibited.