

AN OBSERVATIONAL STUDY ON THE IMPACT OF KANNOLI KAPPOM THITTAM IN PARAMAKUDI, TAMILNADU

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Abstract

BACKGROUND : Providing correction spectacles is the simplest way to improve quality of life in children with decreased visual acuity due to refractive error. Under “Palli Sirar Kannoli Kappom Thittam” (KKT) Scheme of Tamil Nadu government, nearly 75 lakhs students studying from class 6 to class 12 are screened and checked annually, and students with refractive error are provided with free corrective spectacles.

AIM : The aim of this study is to assess continuous wear of spectacles, product status and subjective improvement in academic performance of scheme beneficiaries under KKT scheme in Paramakudi Health Unit District.

METHODS : A Cross-sectional study was conducted among Palli Sirar Kannoli Kappom Thittam beneficiaries in Paramakudi Health Unit District. Multistage random sampling method was used to select Parthibanur block among 6 blocks and Parthibanur Government Higher Secondary School among 37 schools in the block. Data was collected from 53 beneficiary students under KKT scheme by self-administered questionnaire and the results were analysed.

RESULTS : Most common refractive error was myopia present in 96% beneficiaries and astigmatism in nearly 4%. Around 20% of participants reported continuous wear of more than 14 hours, 41% wearing for 6 to 14 hours and 39% wearing less than 6 hours. Subjective academic performance improved in 92.3%. Children who disliked spectacle wear were 30.1%, among whom nearly 75% cited personal dislike and 25% cited peer mockery as reasons for dislike.

CONCLUSION : Awareness among children to promote continuous wear of spectacles is necessary. IEC to improve continuous use and monitoring spectacle wear by teachers and parents are required. Steps need to be taken in school and home environment to prevent peer mockery of students wearing glasses.

KEY WORDS : Refractive error, Kannoli Kappom Thittam, Continuous wear.

INTRODUCTION

Refractive error is a phenomenon that happens when the eye fails to concentrate light rays from objects onto the retinal plane, resulting in blurred image.¹ Myopia or short sightedness, hypermetropia or long sightedness and astigmatism with no single point of focus in the eye are the three types of refractive errors in children. Anisometry is a condition in which the refractive powers of two eyes differ.¹ Refractive error is one of the most common causes of vision impairment, accounting for 47% of all cases of vision impairment in high-income countries. In developing countries, refractive error has a substantial impact, resulting in decreased economic productivity.² Refractive error affects people's lives, including children and adults, causing difficulties in performing regular tasks, decreasing their vision, and eventually causing blindness. It affects people of all ages, but its impact is found to be greater in youngsters due to delay in detection and correction.²

The Right- to- Sight initiative, Vision 2020, was started in 1999 with the goal of eliminating avoidable blindness by prioritizing a few important causes of vision impairment and blindness based on their distribution, impact on the community, management potential, and affordability.³ One of the five priority issues addressed is refractive error. According to World Health Organisation, annually 12.8 million children

between the ages of 9 and 15 suffer from refractive error related visual impairment.⁴

Children are reported to be the most vulnerable segment of the population, with many suffering from vision impairment throughout their life. According to Refractive Error Study in Children conducted by NCBI, prevalence of refractive errors in urban and rural India is 7.4% and 4.7% respectively.⁵ The prevalence of myopia in Indian children is 5.3% whereas hypermetropia and astigmatism is 4% and 5.4% respectively. Correction of refractive errors among school going children is being given priority as it limits their academic potential and if left unaddressed leads to long term effects like amblyopia.⁶ Children try to compensate for their vision problems by sitting closer to the blackboard, pinching their eyes hindering their academic performance. Refractive error is one of the most common eye diseases related to regular absenteeism.⁷ Visual impairment can progress to amblyopia if untreated. Visual impairment also affects the social, professional, and developmental aspects of



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the affected children. Compliance towards spectacle-wearing in children is comparatively difficult than adults, owing to not understanding the importance of spectacle wearing. It is estimated that approximately 7-30% of blindness in children can be corrected and avoided.⁸

The most cost-effective treatment modality for correction of visual impairment associated with refractive error is wearing spectacles.⁹ Wearing spectacles along with being the most effective treatment modality for correcting refractive error is also an economic treatment modality aiming to improve eye, vision, function, and productivity in children.¹⁰ Spectacles apart from being inexpensive are also non-invasive and simple to use. Under “Palli Sirar Kannoli Kappom Thittam” Scheme of Tamil Nadu government, around 75 lakhs students studying from class 6 to class 12 are screened annually and free spectacles are issued for RE correction. However, the efficacy and success of such a scheme is largely governed by the compliance of the wearers.¹¹

Various studies have assessed the compliance towards spectacles wearing in children. Low compliance rates were seen even in older children and in subjects where free spectacles were given.¹² Factors responsible were self-esteem, safety concerns, peer pressure, perception of subjects and parents, forgetfulness, loss, breakage, and/or poor follow-up. Studies assessing the compliance of Kannoli Kaapom Thittam (KKT) beneficiaries are limited. Hence, the present study was conducted to assess the compliance to wearing spectacles – duration of wear, product status and subjective improvement in academic performance of scheme beneficiaries under KKT scheme in Paramakudi Health Unit District.

METHODOLOGY

The study was conducted as a cross-sectional study. Sampling method used was multistage random sampling. Among 6 blocks in Paramakudi health unit district, Parthibanur block was chosen by simple random sampling. Parthibanur block has total 37 government schools, of which Parthibanur government higher secondary school was selected by simple random sampling. Students of class 6 to class 12 who have received corrective glasses under the Kannoli Kaapom Thittam during the year 2021-2022 were included for the study. Students suffering with strabismus, amblyopia, glaucoma, cornea or lens or retinal disorders, conjunctivitis and with cognitive impairment were excluded.

Out of total 1095 students studying in 6th to 12th class there were 137 beneficiaries who have received corrective glasses under Kannoli Kaapom Thittam during the year 2021-2022 in the school. Out of 137 beneficiaries, 33 students have

passed out to college education after completing 12th class, 27 students have changed schools after class 10, 20 absentees were not contactable after 2 recall visits and 1 student was not willing. Students with strabismus were 3, who were excluded. All available 53 students were included in the study and data collected using a self-administered questionnaire. Questionnaire with basic demographic variables, spectacle condition at the time of study, duration of continuous wear, improvement in subjective academic performance and interest to wear spectacles was administered. Type of refractive error was assessed from health record. Results were collected and data was analyzed. The study was conducted after obtaining ethical committee clearance of Directorate of Public Health and Preventive Medicine. Permissions were obtained from school education department and consent of parents obtained before the conduct of the study.

RESULTS :

Out of 53 participants, about 57% (n=30) were males and 43% (n=23) were females. Median age of the participants is 15 years with minimum age 12 years and maximum age 18 years. Distribution of participants by age is given in table 1.

Table 1 : Age Distribution of participants

Age (Years)	Frequency (n)	Percentage (%) (N=53)
12	1	1.9
13	2	3.8
14	28	53.8
15	1	1.9
16	13	25
17	7	13.5
18	1	1.9

Table 2 : Compliance to Spectacles Wear

Duration of spectacle wear	Frequency (n)	Percentage % (N=53)
< 6 hours	20	38.7
6 - 14 hours	22	41.5
> 14 hours	11	20.8

Among the study participants corrective spectacles have been prescribed for myopia in 96.2% (n=50) and

for astigmatism in 3.8% (n=3) children. No participant had hypermetropia. All the 53 participants reported their spectacles being in good condition. Compliance to spectacles wear as hours of glass wear in a typical day is reported in table 2. Around 20% (n=11) reported as wearing for more than 14 hours a day while nearly 40% (n=20) reported as wearing less than 6 hours a day.

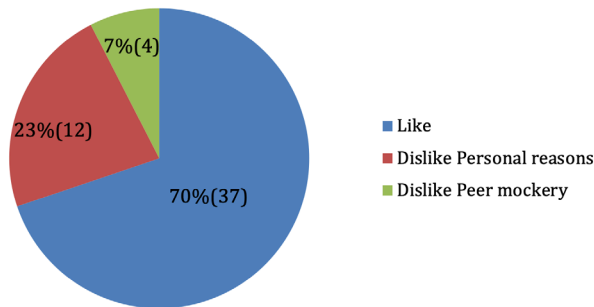


Figure 1. Spectacle wear interest

Subjective improvement in academic performance was reported by 92.3% (n=48) of participants. No improvement in academic performance was reported by 5 participants. Among participants, students reported interest to wear spectacles is 70% (n=37). Among the remaining 16 students who reported not liking to wear spectacles, 12(75%) students reported as personal dislike and 4(25%) students reported peer mockery as reason for dislike for spectacle wear as in fig 1.

INTERPRETATION

Myopia was the most common refractive error in school going children. Majority of the children were irregular wearers, personal dislike and peer mockery were the reasons reported. Academic performance improved for the beneficiaries. Product quality was good.

DISCUSSION

Almost all students who were prescribed corrective glasses is for myopia while no student had hypermetropia, indicating myopia is the most common refractive error among children. While all the students were expected to wear the spectacles throughout the day, only 20% reported wearing it for more than 14 hours per day. According to national center for Health Statistics, 35.3% Indian children between 12 to 17 years had continuous wear of spectacles. Majority of the students in this study reported irregular use of less than 14 hours per day, among whom half of them reported wearing less than 6 hours per day and remaining wearing spectacles for 6 to 14 hours per day. Subjective improvement in academic performance after wearing spectacles was reported by most of the students.

Despite academic performance improvement in majority of students, continuous wear of spectacles was less. Nearly a third of the students reported dislike to wear spectacles and few of them reported peer mockery as the reason for dislike to wear spectacles. Students in adolescence may seek peer agreeability and cosmetic appeal could be an important reason for personal dislike to wear spectacles hindering compliance to continuous wear of prescription spectacles.

CONCLUSION

KKT scheme ensured the accessibility to spectacle correction to school children, still adherence to continuous wear was poor. The effectiveness of this program can be improved by providing a greater choice of spectacle frames, educating the benefits of correction to students and their parents and involving the teachers to improve compliance. Real benefit of the scheme can reach the beneficiaries only by continuous use of the spectacles provided.

RECOMMENDATIONS

Along with providing free prescription glasses, providing awareness among children for regular use of spectacle will be beneficial. Providing IEC activities using personal communication strategies and group counseling methods while providing spectacles is required. Monitoring and supporting the students to promote continuous glass wear and steps to prevent peer mockery in domestic as well as school environment is needed. Teachers and parents have to be sensitized towards this problem and promote continuous spectacles wear. Class teachers can play a vital role in this regard.

LIMITATIONS

The present study has a few important limitations including inadequate sample size and cross-section nature. Academic performance was assessed subjectively. Compliance to glass wear may be required to be elicited from teachers and parents. Study with larger sample size with adequate power and prospective study to assess the variables will be needed.

REFERENCES

1. Saxena R, Sharma P Pediatric Ophthalmology Expert Group. National consensus statement regarding pediatric eye examination, refraction, and amblyopia . Indian J Ophthalmol. 2020;68:325–32.
2. Honavar, S.G.: The burden of uncorrected refractive error. Indian Journal of Ophthalmology. 2019;67:577–8.

3. Sheeladevi S, Seelam B, Nukella PB, Borah RR, Ali R, Keay L. Prevalence of refractive errors, uncorrected refractive error, and presbyopia in adults in India: a systematic review. *Indian J Ophthalmol.* 2019;67:583–92.
4. Nemeth J, Tapasztó B, Aclimandos WA, Kestelyn P, Jonas JB, De Faber JHN, et al. Update and guidance on management of myopia. European Society of Ophthalmology in cooperation with International Myopia Institute. *Eur J Ophthalmol.* 2021;5:112.
5. Mutti D O, Zadnik K, Adams A J. Myopia. *Invest Ophthalmology & Vis Sci.* 1996;37:952
6. Morjaria P, McCormick I & Gilbert C. Compliance and predictors of spectacle wear in schoolchildren and reasons for non-wear: a review of the literature. *Ophthalmic Epidemiol* 2019;26:367–77.
7. Mehnaz S, Siddiqui Z, Abedi AJ, Ansari MA. Spectacle wear and factors associated with non-compliance among children of 5-15 years. *Indian J Comm Health.* 2020;32:87–90.
8. Bhatt NK, Rathi M, Dhull CS, Sachdeva S, Phogat J. Spectacle compliance amongst school children of Rohtak. *Int J Community Med Public Health.* 2017;4:734–7.
9. Sharma P, Gaur N. How do we tackle a child's spectacle? *Indian J Ophthalmol.* ;5:651–2.
10. Gogate P, Mukhopadhyaya D, Mahadik A, Naduvilath TJ, Sane S, Shinde A. Spectacle compliance amongst rural secondary school children in Pune district, India. *J Ophthalmol.* 2013;61:8–12.
11. Bhandari G, Pradhan S, Shrestha M, Bassett K. Eyeglasses compliance among undergoing school visual acuity screening. *Adv Ophthalmol Vis Syst.* 2016;5:286–90.