

An empirical study on prevalence of uncorrected refractive error and other eye diseases among teen age students in Ahmadabad, Gujarat

Pina Soni^{1*}, Shilpa Bhatt², Dharmendra Jena³, Dhvani Soni⁴

¹Associate Professor, Department of Ophthalmology, GMERS, Sola, Ahmedabad, Gujrat, INDIA.

²Associate Professor Department of Ophthalmology GMERS Gandhinagar, INDIA.

³Manager, Blind People's Association, Ahmedabad Gujarat, INDIA.

Email: pinasoni@yahoo.co.in

Abstract

A study conducted to compare the magnitude and determinants of uncorrected refractive error and use of spectacles among school children of 11 to 15 years old in urban and rural Ahmedabad in the state of Gujarat. Total 200 children were selected through cluster sampling method from the attendance register of 2 urban schools and 2 rural schools for evaluation from 5 to 12 standards. Optometrists assessed visual acuity, refractive error in rural and urban children. Ophthalmologists screened for ocular pathology. Data of uncorrected refractive error, amblyopia, strabismus and blinding eye diseases was analyzed to compare the prevalence and risk factors among children of rural and urban areas. The prevalence of uncorrected refractive error in urban and rural children was 46% and 15%, respectively. Among the 46% of the students having refractive error 82% were using spectacles in urban areas, whereas in rural areas among the 15% of the students having refractive error 3% were using spectacle. The prevalence of myopia, hypermetropia and amblyopia in urban children was 2%, and in rural children, the prevalence of, hypermetropia and amblyopia was 1%. Height, weight, parent education, use of spectacles by parents, watching television, use of computers or electronic devices and its duration included for urban and rural students. Among the 17% spectacle user in urban areas 35% of the students have obtained spectacle from DBCS where as 65% student got the spectacle from their own source. Where as in rural areas 66% of the students obtained spectacle from DBCS and 33% of the students using spectacle obtained the spectacle from their own source. The prevalence of refractive error is higher in urban areas in comparisons to rural areas. Refractive error could be considered as an avoidable condition among various conditions leading to visual disabilities in children. Provision of spectacles to the needy is a cost-effective health intervention. Most of the children with uncorrected refractive error are asymptomatic and hence screening helps in early detection and timely interventions. The urban students are more exposure to pollution, use of computer, long span of watching TV, eating junk food, use of mobile game, which supports the cause of large number of refractive error more in urban areas in comparison to rural areas in Ahmadabad district. Eye screening of school children is recommended in large scale. Parent's awareness though IEC should be used in order to enhance the attitude towards use of spectacles among children and parents. Compulsorily school screening camps should be taken place mostly in all rural areas.

Keywords: uncorrected refractive error.

*Address for Correspondence:

Dr. Pina Soni, Associate Professor, Department of Ophthalmology, GMERS, Sola, Ahmadabad, Gujrat, INDIA.

Email: drmg1983@gmail.com

Received Date: 24/10/2016 Revised Date: 16/11/2016 Accepted Date: 10/12/2016

Access this article online

Quick Response Code:	Website: www.medpulse.in
	DOI: 12 December 2016

INTRODUCTION

To compare the magnitude and determinants of uncorrected refractive error, such as age, sex, family history of refractive error and use of spectacles among school children of 11 to 15 years old in urban and rural Ahmadabad in the state of Gujarat.

200 children were selected through cluster sampling method from the attendance register of 2 urban schools and 2 rural schools for evaluation. After the questionnaire been framing a pilot study will be conducted in any school and after that final questionnaire will be developed

of which the study work can be initiated. The urban and rural groups significantly differed by proportions of students in 'age groups, so we decided to covered the student from the class of 5th to 12th which been considered to be the age of puberty in India. The study was intend to found out the prevalence of refractive error among urban and rural students, other eye diseases among both rural and urban and will give a comparison in between. The study will also try to find out the socio economic and family relation for the problem.

MATERIAL AND METHODS

Optometrists assessed visual acuity, amblyopia and myopia in rural and urban children. Ophthalmologists screened for ocular pathology. Data of uncorrected refractive error, amblyopia, strabismus and blinding eye diseases was analyzed to compare the prevalence and risk factors among children of rural and urban areas.

RESULTS

We examined 200 children of 1 urban clusters where 100 students been studied and 100 children of 1 rural clusters. The prevalence of uncorrected refractive error in urban and rural children was 46% and 15%, respectively. Among the 46% of the students having refractive error 82% were using spectacles in urban areas, where as in rural areas among the 15% of the students having refractive error 3% were using spectacle. The prevalence of myopia, hypermetropia and amblyopia in urban children was 2%, and in rural children, the prevalence of, hypermetropia and amblyopia was 1%. As height is concern the urban student has good standard of height in comparison of Rural students. In Urban areas majority of the students are from the height group of 141 cm to 150 cm where as in rural areas majority of the students are from the height group of 120 cm to 130 cm. Among Urban students majority of the students are from the weight group of 31 kg to 40 kg where as in rural areas majority of the students are from the weight group of 20 kg to 30 kg. Among the urban students majority of their mother are from the education group of High School, where as in rural areas majority of the mother are from the education group of Primary school followed by uneducated. Among urban fathers majority have in the qualification of class 8th to 12th where as among rural parent's majority of the parents are from the qualification group of class 1st to class 7th. As use of glasses is concern, 23% of the urban mothers are using glass where as in Rural areas 13% of the mothers using spectacles. In Urban father 32% are using spectacle where as in rural father 15% are using spectacles. As life style of watching television is concern, 54% of the students watch TV more than two hours, where as in rural areas 46% of the

students watch tv more than one hour. In urban areas 3% of the students does not have access to Television where as in rural areas 14% students does not have access to television. In Urban areas 70% does not have access to computer, where as in Rural areas 95% students does not have access to computer. In urban areas 26% of the students use computer more than one hour a day where as in rural areas 5% students use computer more than one hour a day. Among the 17% spectacle user in urban areas 35% of the students have obtained spectacle from DBCS where as 65% student got the spectacle from their own source. Where as in Rural areas 66% of the students obtained spectacle from DBCS and 33% of the students using spectacle obtained the spectacle from their own source.

CONCLUSION

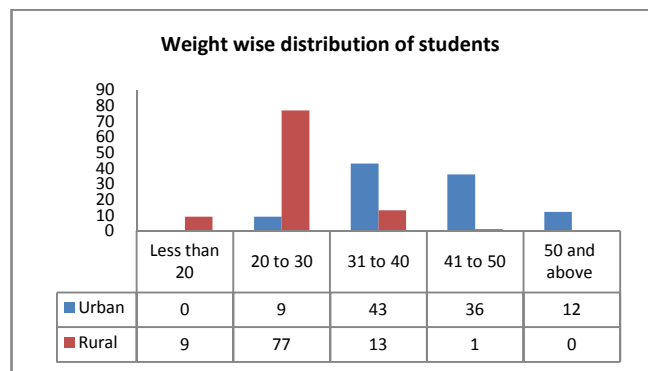
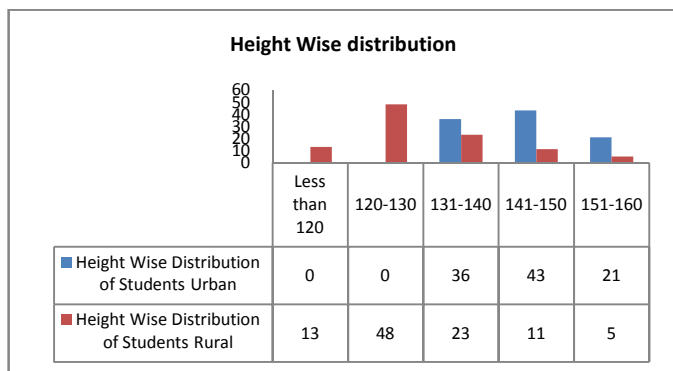
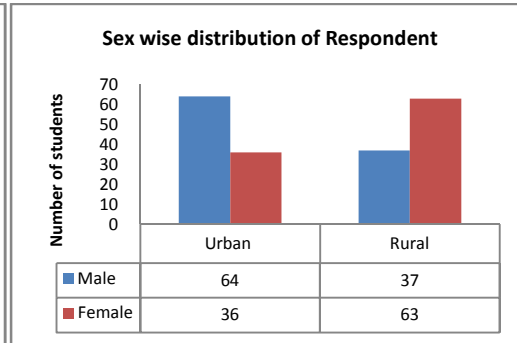
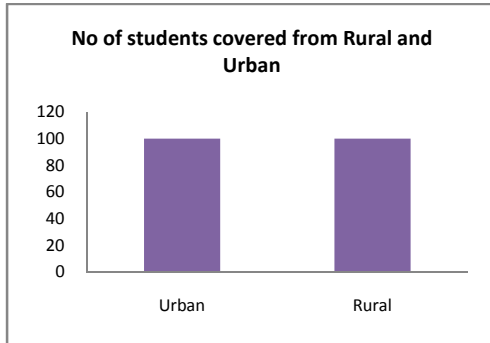
The prevalence of refractive error is higher in urban areas in comparisons to rural areas. Refractive error could be considered as an avoidable condition among various conditions leading to visual disabilities in children. Provision of spectacles to the needy is a cost-effective health intervention. Hence the VISION 2020 initiative to eliminate avoidable blindness has given high priority to correction of refractive error and has placed it within the category of "childhood blindness." Most of the children with uncorrected refractive error are asymptomatic and hence screening helps in early detection and timely interventions. In countries with high attendance of children in schools, integration of vision screening within screening for other health issues is recommended. However, differences in the availability of access to eye care services and even the magnitudes of refractive error between rural and urban students are not considered. The urban students are more exposure to pollution, use of computer, long span of watching tv, eating junk food, use of mobile game, which supports the cause of large number of refractive error more in urban areas in comparison to rural areas in Ahmadabad district. The prevalence of uncorrected refractive error, especially myopia, was higher in urban children. Causes of higher prevalence and barriers to refractive error correction services should be identified and addressed more in rural areas. Eye screening of school children is recommended in large scale. Parent's awareness though IEC should be used in order to enhance the attitude towards use of spectacles among children and parents. Compulsorily school screening camps should be taken place mostly in all rural areas along with IEC activities. However, the approach used may be different for urban and rural school children. For conducting vision screening camp, provision of spectacles and conducting IEC activities public private partnership may be come with a great

strategy. For IOL surgery NGOs are doing a tremendous job where as for school screening camp partnership with NGOs can be a great help, cost effective and covering large scale. For a better outcome public private partnership is highly recommended.

Abbreviation

- UE- Uneducated
- 1st to 10th – Class 1 to Class 10th s
- 10th to 12th- Class 10th to Class 12th
- Grd- Graduation
- Edu- Education
- IEC- Information Education and Communication

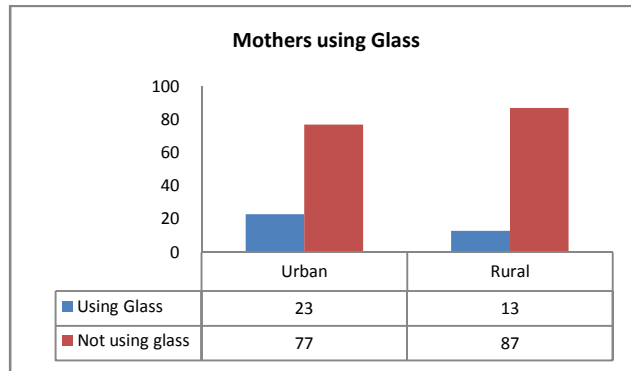
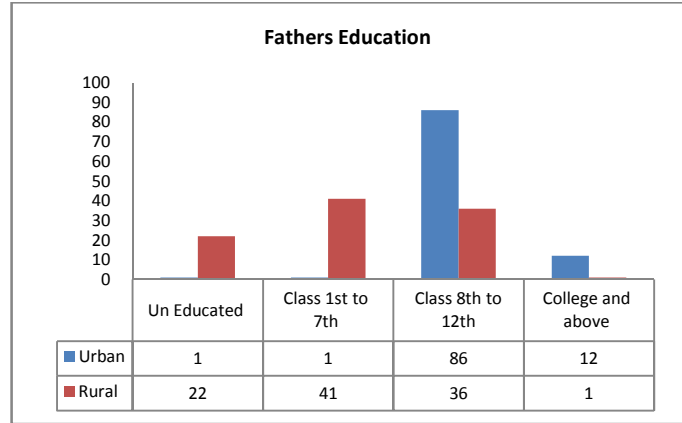
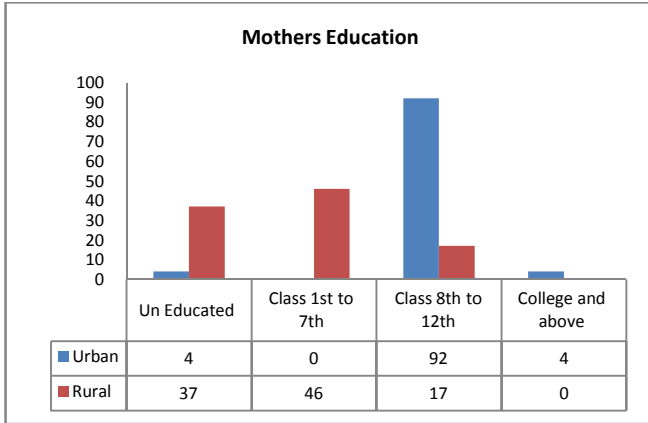
Findings



Sex	Urban	Rural
Male	64	37
Female	36	63

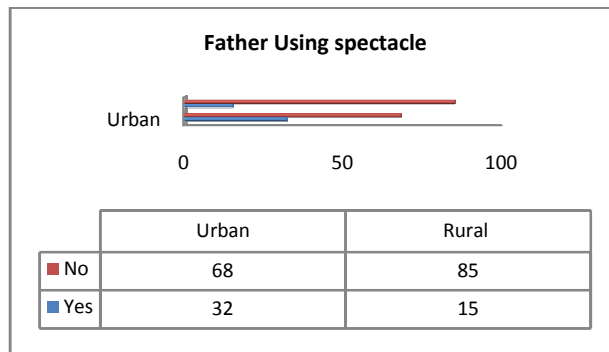
Height Wise Distribution of Students		
Category	Urban	Rural
Less than 120	0	13
120-130	0	48
131-140	36	23
141-150	43	11
151-160	21	5

As height is concern the urban student has good standard of height in comparison of Rural students. In Urban areas majority of the students are from the height group of 141 cm to 150 cm where as in rural areas majority of the students are from the height group of 120 cm to 130 cm.



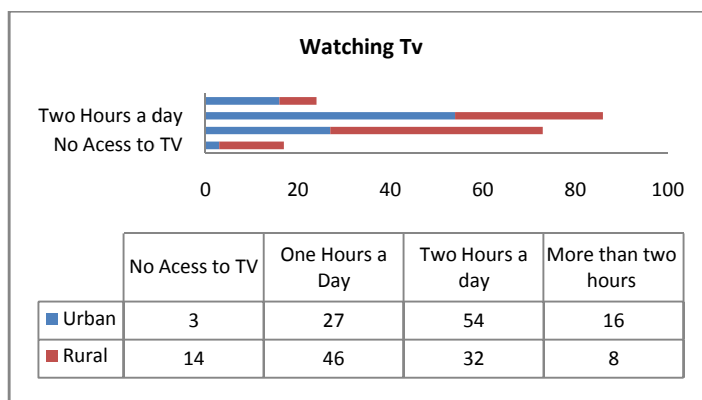
Mother wearing Glass	Urban	Rural
Using Glass	23	13
Not using glass	77	87

The above table clearly shows that among Urban mother 23% of the mothers are using glass where as in Rural areas mothers of the students 13% are using spectacles.



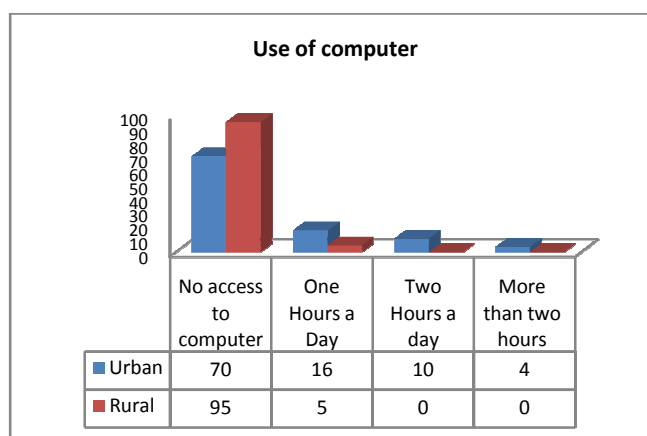
Father wearing Glass	Urban	Rural
Yes	32	15
No	68	85

In Urban father 32% are using spectacle where as in rural father 15% are using spectacles.



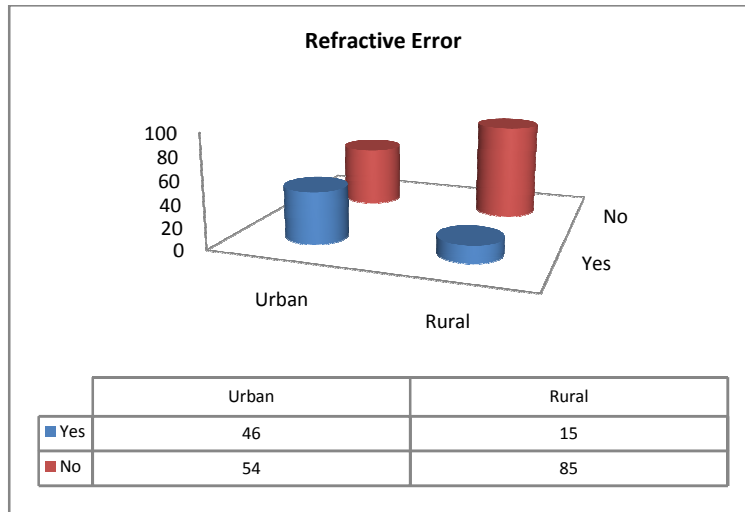
Student Watching TV duration	Urban	Rural
No Access to TV	3	14
One Hours a Day	27	46
Two Hours a day	54	32
More than two hours	16	8

The above table clearly shows that in urban areas 54% of the students watch tv more than two hours, where as in rural areas 46% of the students watch tv more than one hour. In urban areas 3 students does not have access to Television where as in rural areas 14% students does not have access to television.



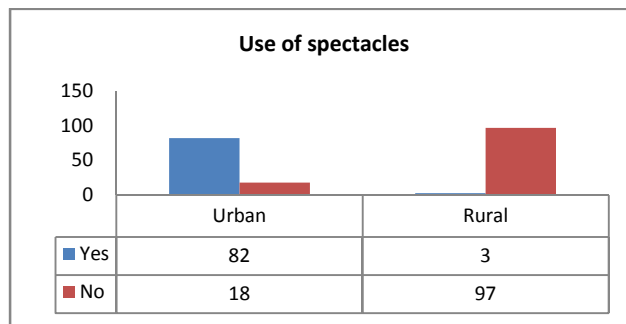
Computer work	Urban	Rural
No access to computer	70	95
One Hours a Day	16	5
Two Hours a day	10	0
More than two hours	4	0

In Urban areas 70% does not have access to computer, where as in Rural areas 95% students does not have access to computer. In urban areas 26% of the students use computer more than one hour a day where as in rural areas 5% students use computer more than one hour a day.



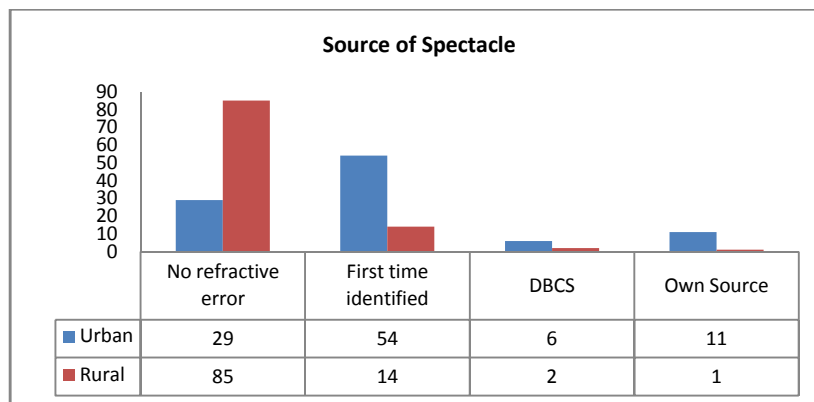
Refractive error	Urban	Rural
Yes	46	15
No	54	85

In urban areas 46% of the students is having refractive error where as in rural areas 15% students is having refractive error. Overall 30% of the students are having refractive error.



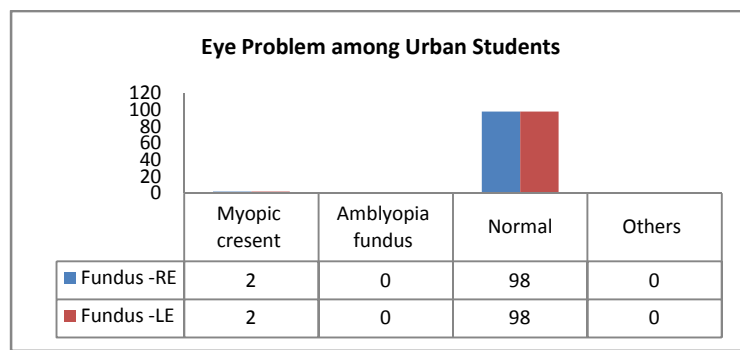
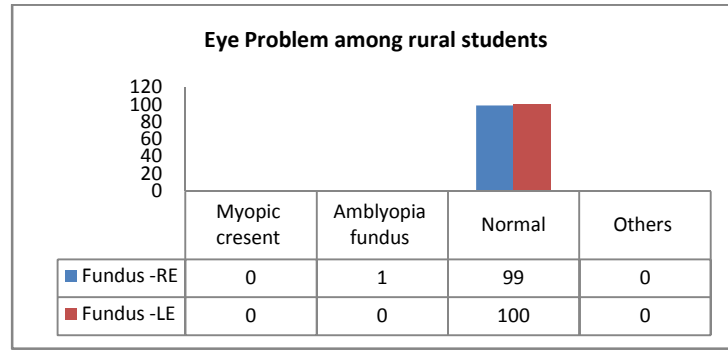
Using Spectacle	Urban	Rural
Yes	82	3
No	18	97

Among the 46% of the students having refractive error 82% were using spectacle in urban areas, where as in rural areas among the 15% of the students having refractive error 3% were using spectacle.



Source of spectacle	Urban	Rural
No refractive error	29	85
First time identified	54	14
DBCS	6	2
Own Source	11	1

Among the 17% spectacle user in urban areas 35% of the students have obtained spectacle from DBCS where as 65% student got the spectacle from their own source. Where as in Rural areas 66% of the students obtained spectacle from DBCS and 33% of the students using spectacle obtained the spectacle from their own source.



Urban	Fundus -RE	Fundus -LE
Myopic crescent	2	2
Amblyopia fundus	0	0
Normal	98	98
Others	0	0
Rural	Fundus -RE	Fundus -LE
Myopic crescent	0	0
Amblyopia fundus	1	0
Normal	99	100
Others	0	0

The Above table clearly shows that 2% of the urban students is having Myopic crescent and 98% is having clear fundus and among Rural only one students is having ambloopia fundus in one eye and all other student was having normal fundus.

REFERENCES

1. A study on refractive errors among school children in Kolkata. Das A1, Dutta H, Bhaduri G, De Sarkar A, Sarkar K, Bannerjee M.
2. A study on the prevalence of refractive errors among school children of 7-15 years age group in the field practice areas of a medical college in bangalore. Pavithra MB, Maheshwaran R, Rani Sujatha MA.
3. Refractive Errors in School Children: A Review ... Reduced vision because of uncorrected refractive errors ... Rural Epidemiology) Eye Study in south India.
4. Refractive Status and Prevalence of Refractive Errors in Suburban School-age Children. Lian-Hong Pi, Lin Chen, Qin Liu, Ning Ke, Jing Fang, Shu Zhang, Jun Xiao, Wei-Jiang Ye, Yan Xiong, Hui Shi, Zheng-Qin Yin.
5. Refractive Error, Visual Acuity and Causes of Vision Loss in Children in Shandong, China. The Shandong

- Children Eye Study. Jian Feng Wu, Hong Sheng Bi , Shu Mei Wang, Yuan Yuan Hu, Hui Wu, Wei Sun, Tai Liang Lu, Xing Rong Wang, Jost B. Jonas.
6. Frequency and Distribution of Refractive Error in Adult Life: Methodology and Findings of the UK Biobank Study
Phillippa M. Cumberland , Yanchun Bao, Pirro G. Hysi, Paul J. Foster.
 7. Christopher J. Hammond, Jugnoo S. Rahi, UK Biobank Eyes & Vision Consortium Published: October 2, 15.
 8. Blind People's Association- www.bpaidia.org

Source of Support: None Declared
Conflict of Interest: None Declared