

# Evaluation of Children in Two Blind Schools in the East Mediterranean Region in Turkey

## Doğu Akdeniz Bölgesi'nde İki Körler Okulundaki Çocuklarda Körlük Sebepleri

Adnan AKSOY<sup>1</sup>, Lokman ASLAN<sup>2</sup>, Murat ASLANKURT<sup>2</sup>, Murat ÖZDEMİR<sup>3</sup>, Didem DİLSİZOĞLU<sup>4</sup>

### ABSTRACT

**Purpose:** We aimed to evaluate the causes of severe visual impairment in legally blind children in The East Mediterranean Region in Turkey.

**Materials and Methods:** One hundred eighty five children attending the schools for the blinds were included into the study. The major underlying etiology of blindness was recorded using the standardization of World Health Organization. Full ophthalmic examinations were performed, and past medical history, familial history, intellectual status, consanguineous marriage (CM) and socio-economic status were noted.

**Results:** The major pathology of BL was at whole globe in 23 (12.4%), retina in 139 (75%), lens in 29 (16.4%) and cornea in 7 (3.8%). The number of cases whom were treatable or had capability of improvement were 95 (51.2%). These patients had high hypermetropia, cataract and glaucoma accounted for 61 (33%), 29 (15%) and 6 (3.2%), respectively. We detected a history of CM in parents of 104 (56.2%) patients. We observed a high correlation between BL and CM ( $r=0.689$   $p<0.05$ ).

**Conclusions:** Many causes of BL were potentially preventable. There is a high positive correlation between BL and CM

**Key Words:** Consanguineous marriage, blindness, severely visually impaired.

### ÖZ

**Amaç:** Türkiye'de Doğu Akdeniz Bölgesi'nde yasal olarak kör (snellen eşeline göre görme keskinliği 1/10 ve daha az olanlar) çocuklarda, ciddi görme bozukluğu nedenlerini değerlendirmek.

**Gereç ve Yöntem:** Körler okulu olarak adlandırılan, ciddi görme azlığı olan öğrencilere hizmet veren okula giden 185 çocuk çalışmaya dahil edildi. Körlüğe sebep olan etyolojik hastalıklar belirlendi. Tam göz muayenesi yapıldı ve tıbbi öykü, aile öyküsü, eğitim durumu, akraba evliliği (CM) ve sosyo-ekonomik durumu kaydedildi.

**Bulgular:** Ciddi görme bozukluğu olan öğrencilerin lokalizasyonuna göre hastalıklar, tüm globu etkileyen 23 kişi (%12.4), retinadan kaynaklanan 139 kişi (%75), lense ait 29 kişi (%16.4) ve korneayla ilgili 7 kişi (%3.8) olarak bulundu. Kısmen bile olsa tedavi edilebilecek olanlar 95 kişi (%51.2) bulundu. Bu öğrencilerin hastalıkları sırasıyla, yüksek hipermetropi 61 kişi (%33), katarakt 29 kişi (%15) ve glokom 6 kişi (%3.2) olarak tespit edildi. Öğrencilerin 104 tanesinde akraba evliliği tespit edildi. Körlük ve akraba evliliği arasında yüksek korelasyon bulundu ( $r=0.689$   $p<0.05$ ).

**Sonuç:** Körler okuluna devam eden öğrencilerin, körlük sebeplerine bakıldığında yaklaşık yarısının durumunun iyileştirilebilir olduğu gözlemlendi. Körlük ve akraba evliliği arasında ciddi korelasyon gözlemlendi.

**Anahtar Kelimeler:** Akraba evliliği, körlük, ciddi görme azlığı.

- 1- M.D., Sütçüimam University Faculty Of Medicine, Department Of Ophthalmology, Kahramanmaraş/TURKEY  
AKSOY A., dradnanaksoy@hotmail.com
- 2- M.D. Asistant Professor, Sütçüimam University Faculty Of Medicine, Department Of Ophthalmology, Kahramanmaraş/TURKEY  
ASLAN L., lokaslan46@yahoo.com  
ASLANKURT M., maslankurt80@hotmail.com
- 3- M.D. Professor, Sütçüimam University Faculty Of Medicine, Department Of Ophthalmology, Kahramanmaraş/TURKEY  
ÖZDEMİR M., drmozdemir@hotmail.com
- 4- M.D. Asistant Sütçüimam University Faculty Of Medicine, Department Of Ophthalmology, Kahramanmaraş/TURKEY  
DİLSİZOĞLU D., didemdlz@gmail.com

**Geliş Tarihi - Received:** 02.07.2012  
**Kabul Tarihi - Accepted:** 27.07.2012  
**Ret-Vit 2012;20:218-220**

**Yazışma Adresi / Correspondence Address:** M.D., Adnan AKSOY  
Sütçüimam University Faculty Of Medicine, Department Of Ophthalmology,  
Kahramanmaraş/TURKEY

**Phone:** +90 344 219 10 00  
**E-Mail:** dradnanaksoy@hotmail.com

## INTRODUCTION

The negative effect of blindness on people's lives is not hard to imagine. The control of blindness in children is one of the priority areas of the World Health Organization's "Vision 2020-the right to sight" program. This is a global initiative, which was launched by WHO in 1999 to eliminate avoidable blindness worldwide "by the year 2020.<sup>1</sup> In adulthood, blindness are more frequent than childhood.

However morbidity caused by total calculated blind period of children is equivalent to adults.<sup>2</sup> The prevalence of blindness in children ranges from approximately 0.3/1000 children in wealthy regions, up to 5 times in poor areas.<sup>4</sup> The World Health Organization's (WHO's) International Classification of Diseases (ICD)-10 categorizes blindness as better-seeing eye 1/20 or less and defines low vision as "best corrected visual acuity in the better-seeing eye of <6/18 (<20/63).

In terms of developmental psychology, childhood includes age 14. After this age, psychological aspects of childhood end with the beginning of adolescence.<sup>3</sup> We aimed to reveal causes of blindness (BL) and severe visual impairment (SVI) in our region and to offer solutions.

## MATERIALS AND METHODS

The screening was done in schools for blinds of Gaziantep and Kahramanmaraş, southern provinces of Turkey, to investigate the cause of diseases in visually impaired children.

A total of 185 students were examined in two schools. The necessary permission from the authorities was taken. The ethics committee consents were obtained from local committees and the informed consent were obtained from each student. Patient records, medical reports, age, gender, additional medical problems, consanguineous marriage (CM) of the parents were searched. If necessary, school officials were requested for additional information.

Visual acuity was measured via Snellen acuity chart. Complete ocular examination was done. Cycloplegic refraction was measured by autorefractometer (Canon RK-F10). Visual acuity to light perception (+) and light perception (-) were accepted as BL, and less than 1/10 Snellen as SVI.

SPSS 8.0 was used for statistical analyzes. Independent T-Test was used to compare in aspect of frequency of pathologies in CM and socio-economic status. Pearson correlation test was used to address CM and their relatives' pathologies.  $P < 0.05$  accepted as significant.

## RESULTS

Seventy female (37.9%) and 115 male (62.1%) students were examined in two schools for blinds. Students were between ages 6-19 (mean 11.7). All of them had obtained health council report before school enrollment. Socio-cultural-economic levels of the families were generally low. Eighty five subjects graduated from primary school and family of 46% had an income of minimum wage (385 \$ per month) or less (Table 1).

Total consanguineous marriage rate among the parents was 57.8%. 104 of the subjects had parents with second degree consanguinity (cousin marriages) (56.2%) and tertiary degree consanguineous marriage percentage was (children of cousins) 1.6%.

Forty nine of students had visually impaired close relatives (father, brother, sister, uncle) (26.4%). CM was significantly correlated to close relatives in disease ( $p < 0.05$ ).

Learning disabilities and mental retardation was detected in 13 students (7%). One student had growth retardation (0.54%). 2 student's fathers had hearing impairment (1.08%). Visual acuities of the subjects according to ICD-10 classification as follows: light perception (-) 29 (15.6%), light perception (+) 33 (%17.8%), 1/10 to 1/20 83 (45%), 1/10 to 2/10 35 (19%) and 2/10 or better 5 (2.7%).

When the diagnosis of patients was classified according to the cause; retinal disease was found to be the most common one (75 students, 40.5%). Oculocutaneous albinism was observed in 12 students (6.4%), retinitis pigmentosa in 23 (12.4%), retinal dystrophies in 35 (18.9%), macular dystrophies in 5 (2.7%) and Leber's congenital amaurosis in 4 (2.2%).

Optic atrophy was seen in 8 students (4.3%). Structural abnormalities inside the eyeball such as microphthalmia, anophthalmia, coloboma or phtisis bulbi were observed in 13 students (12.4%). Buphthalmus was found in 4 students (2.2%), in addition 2 students were found to have glaucoma. We observed corneal pathology in seven students (3.8%), high myopia in six students (3.2%), retinoblastoma in a student (0.5%) and cortical blindness in a student (0.5%). Also we observed childhood cataracts in 28 students (%15), searching nystagmus in 62 students (33.5%), high hypermetropia in fifty two students (33.5%), and ptosis covering the pupil area in 1 student.

**Table 1:** Family income in aspect of CM.

Family Income	Cm (+) (N, %)	Cm (-) (N, %)
Less Than Minimum Wage	85 (46%)	52 (28%)
More Than Minimum Wage	22 (12%)	26 (14%)

**Table 2:** Eye pathologies in people with CM (+) and (-).

CM	Cornea	Lens	Retina	Optic Nerve	Others
(-)	2	9	24	2	20
(+)	5	20	63	6	34

We found significant relationship among the blindness and consanguineous marriage. (Table 2)

## DISCUSSION

Visually impaired subjects, even those perceiving light and shadows, are obliged to rely on other senses in the learning process and academic skills. In low vision, the existing sight along with the other senses can be used functionally for academic skills, and learning process.<sup>5</sup>

According to a study by Turan and colleagues, the most important cause of childhood blindness in Turkey is the hereditary pathologies. The diseases that can be prevented with early intervention during childhood were found to be less prominent. The most effective approach to prevent most of these cases is to lower parental consanguinity rate and to improve eye care facilities.<sup>11</sup> Low vision is a challenge for basic life works, such as reading, writing, and driving and food preparation.

Blindness is not only a public health problem but also a social obstacle. Childhood blindness varies in different parts of the world. Abah et al observed the major causes of childhood eye disorders in Nigeria as uncorrected refractive errors and allergic conjunctivitis.<sup>6</sup> Pal et al found that visually impaired children with aphakia and congenital anomalies of the eye had benefited from refraction and low vision services in North India.<sup>7</sup> Hornby et al., observed that overall 37.4% of children in blind schools had “avoidable” causes of blindness and the major avoidable causes were vitamin-A deficiency and cataract in India.<sup>8</sup>

Maberley et al.,<sup>9</sup> from Canada observed that the overall prevalence of low vision and blindness were in keeping with data from large population-based studies from other developed nation; cataract, visual pathway disease, and macular degeneration were the leading causes of visual impairment. Limburg et al.,<sup>10</sup> from Latin America observed that 43% to 88% of all blindness were curable that were caused by cataract and refractive errors.

Pre-school eye health screening and eye examination for certain periods (a year may be) is recommended. We identified a large number of students who may benefit from the high hyperopic and myopic glasses. In the school, guidance teachers are in charge to communicate with students and family’s visual impairment rehabilitation is not only problem to struggle in this condition.

In conclusion, all pathologies we detected were more common in CM group. And CM was more common in low socio-economic level. Thus either the counseling service to reduce CM and genetically transmitted disease, or policies aimed at enhancing the socio-economic level both may help to reach WHO’s target for eradication of avoidable blindness up to 2020. Else, there is also a need to develop specialized pediatric ophthalmic services for the management of surgically treatable conditions.

## REFERENCES/KAYNAKLAR

1. World Health Organization. Global initiative for the elimination of avoidable blindness. WHO/PBL/97.61. Geneva: WHO 1997.
2. Rahi J.S., Sripathi S., Gilbert C.E. et al. www.ajol.info/index.php/aipm/ Childhood blindness: in India causes in 1318 blind school in nine states. *Eye* 1995;9:545-50.
3. Ministry of Justice statistics of Turkish Republic. www.kriminoloji.com/cocuk%20suclulugu.htm 1991-1995:1386-9.
4. World Health Organization. Preventing blindness in children. Report of a WHO/IAPB scientific meeting. WHO/PBL/00.71. Geneva: WHO, 2000.
5. Sucuoğlu B, Kargın T. [Inclusive practices in primary education: Approaches, methods, techniques.]. İstanbul: Morpa. Taylor, L. R. 2006;275-6.
6. Abah ER, Oladigbolu KK, Samaila E, et al. A Ocular disorders in children in Zaria children’s school. *Niger J Clin Pract* 2011;14:473.
7. Pal N, Titiyal JS, Tandon R, et al. Need for optical and low vision services for children in schools for the blind in North India. *Indian J Ophthalmol* 2006;54:189-93.
8. Hornby SJ, Adolph S, Gothwal VK, et al. Evaluation of children in six blind schools of Andhra Pradesh. *Indian J Ophthalmol* 2000;48:195-200.
9. Maberley DA, Hollands H, Chuo J, et al. The prevalence of low vision and blindness in Canada. *Eye (Lond)* 2006;20:341-6.
10. Limburg H, Barria von-Bischoffshausen F, Gomez P, et al. Review of recent surveys on blindness and visual impairment in Latin America. *Br J Ophthalmol* 2008;92:315-9.
11. Turan A, Recep OF, Abdik O, et al. Blindness in Turkey :A national survey among schools for visually disabled Turkish *Journal of Ophthalmology* 2002;3:397-400.