Binocular vision and reading ability in a Portuguese population of school age children

Carla Costa Lança MSc[1,2], Helena Serra PhD[3], João Prista PhD[2,4]

[1]Escola Superior de Tecnologia da Saúde de Lisboa, [2]Centro de Investigação e Estudos em Saúde Pública, Escola Nacional de Saúde Pública, Portugal, [3]Escola Superior de Educação de Paula Frassinetti, [4]Escola Nacional de Saúde Pública

INTRODUCTION

Preventable visual loss caused by amblyopia (2 to 4%) and its risk factors such as strabismus (3%) and uncorrected refractive errors (5 to 7%) represent an important public health problem (Collins, 2006; Kvarnström et al., 2006; Schmucker et al., 2009).

Children with binocular vision anomalies could be at disadvantage in reading and writing (Dusek, Pierscionek & McClelland, 2010).

OBJECTIVES

(1) Describe binocular vision measures in children of school age; and (2) Describe the impact of abnormal binocular vision on reading ability (reading errors and reading speed).

METHODOLOGY

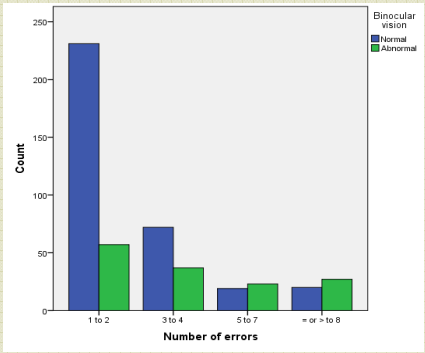
A cross-sectional study was performed with data from 672 children of school age. Children from 1st to 4th grade participated in this study.

Reading errors and reading speed were assessed with a list of 34 Portuguese words. Children also received a vision screening emphasizing binocular vision anomalies.

RESULTS

Children were classified as normal binocular vision (NBV=486) and binocular vision anomalies (BVA=186). Binocular vision anomalies represented a prevalence of 28%.

There was a statistically significant difference in the number of errors (NBV=1.95±2.74; ABV=4.19±5.53-p=0.000) and reading speed (NBV=28.45±15.94;ABV=24.84±17.27-p=0.010) between the two groups of binocular vision (graphic 1).



Graphic 1 - Number of errors per binocular vision.

The number of errors was also statistically different between the two groups for all four grades.

RESULTS

Reading speed in the 3th grade was not statistically different between the two groups (NBV=34.19±11.93; BVA=29.96±12.90 - p=0.113).

DISCUSSION/CONCLUSION

Children with BVA are at educational disadvantage (read more slowly and with more errors). This effect on reading is higher in the 1st three grades.

Health professionals must involve the school community and teachers in problems resolution related to binocular vision anomalies (Ethan, Basch, 2008).

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