Research Article

Prevalence of Congenital Colour Vision Deficiency (CVD) in School Children of Bhaktapur, Nepal

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Abstract:

Background: The incidence of congenital colour vision deficiency shows different trends and may vary in different geographical areas. Colour plays vital role in daily life functioning but there is no effective screening for Colour Vision Deficiency (CVD) at any school level. The school children with CVD may feel difficulty in identifying colour figures, lab instruments and specimens which may lead to failure in the examination. Not only this, they may find difficulty in daily life functioning so, this study is aimed to find out the incidence of CVD in school children.

Methods: A total of 585 school children including 312 males and 273 females between ages 10-16 years were examined for congenital CVD in different schools of Bhaktapur. Each school child was shown the complete range of Ishihara’s plates under day light conditions at distance of 75 cm and each plate was shown to them for duration of 5 seconds.

Results: Children’s colour vision was tested using Ishihara’s 38 Plates edition. Among 312 boys, 16(5.12%) were colour deficient. Among 273 girls, 7(2.56%) were colour deficient.

Conclusion: With this incidence of colour vision deficiency it shows the importance of screening for CVD in school children and counseling them for daily life functioning and making aware about the choice of career in future.

Key Words: Ishihara’s Charts (Plates), Colour vision deficiency, Bhaktapur.

INTRODUCTION

Ishihara’s Charts (Plates), Colour vision deficiency, Bhaktapur.

METHODS

A cross sectional study was conducted in school children of Bhaktapur after obtaining ethical clearance from Institutional
Review Committee (IRC) of Kathmandu Medical College. Informed written consent was taken before collecting the data. The study was done in May-June, 2017. A total of 585 school children aged 10–16 years (Both males and females) were tested for CVD. The selection of students was done by purposive sampling method, i.e. the children willing to be tested were only enrolled in the study. Each student was shown the complete range of Ishihara’s plates under natural daylight at a distance of 75 cm. Time taken for reading each plate by the subject was not be more than 5 seconds. The types of color vision deficiency was differentiated with the help of key provided with the chart. The tests was performed as recommended by Ishihara.11-14

RESULTS

In the present study 585 school children (Boys 312, girls 273, age 10-16 years), from four schools of Bhaktapur, Nepal was assessed for congenital color vision deficiency. The prevalence of color blindness among the study subjects showed higher prevalence in male subjects. Among 312 boys, 16(5.12%) were colour deficient(Figure 2). Among 273 girls, 7(2.56%) were colour deficient . Among the color deficients, were deuteranopia (06), deuteranomaly (11) and protanomaly (06)(Table 1 and Figure 1).

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Normal colour vision</th>
<th>Colour deficient</th>
<th>Deuteranopia</th>
<th>Deuteranomaly</th>
<th>Protanomaly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys(312)</td>
<td>396</td>
<td>16</td>
<td>05</td>
<td>09</td>
<td>02</td>
</tr>
<tr>
<td>Girls(273)</td>
<td>166</td>
<td>07</td>
<td>01</td>
<td>02</td>
<td>04</td>
</tr>
<tr>
<td>Total(585)</td>
<td>562</td>
<td>23</td>
<td>06</td>
<td>11</td>
<td>06</td>
</tr>
</tbody>
</table>

Table 1: Prevalence of congenital colour vision deficiency among the study subjects. (N=585)

DISCUSSION

The percentage distributions of color vision deficiency in the different ethnic groups and countries are found to be variable: in our present study the prevalence of color vision deficiency among the male children (5.12%) were found to be similar recorded by Niroula and Saha (3.8%) in Pokhara, Nepal.15 In the present study the prevalence of color vision deficiency among female children (2.56%) were found to be similar with some researches done in Saudi Arabia (0.75%) by Oriowo and Alotaibi in 2008.16 Similarly in India it was seen in 1.69% in a study done by Shah et al. in 2013.17 It is also found that the prevalence of colour vision deficiency in boys is 5.12% by this study which is slightly less than 8% prevalence rate observed in males among Caucasians in Europe, Great Britain and United States.18 Thus though the prevalence rate for colour vision deficiency is quite similar all over the world but a smaller difference in the incidence rate is observed which may be attributed to the ethnic variations in the different populations and geographic regions. From this study it is also observed that prevalence of colour vision deficiency is much higher in males (i.e. 5.12%) as compared to that in females (i.e. 2.56%).

CONCLUSION

Colour vision deficiency sometimes cause issues such as difficulty at school if colours are used to help with learning, problems with food, identifying whether the fruit is ripe or not, trouble in identifying safety warnings or signs. Certain jobs, such as pilots, pathologists, train drivers, electricians and air traffic controllers, may require accurate colour identification. A proper study should be done in order to find the prevalence of CVD in school children so that in future, such people could avoid certain career and make their life comfortable.

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REFERENCES


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