



## INTERNATIONAL JOURNAL OF PHARMACEUTICAL RESEARCH AND BIO-SCIENCE

### INCIDENCE OF COLOR BLINDNESS AMONG SCHOOL CHILDREN OF CHROMEPET, CHENNAI

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**Accepted Date: 19/11/2016; Published Date: 27/12/2016**

**Abstract:** The incidence of color blindness varies from race to race and different in different geographical area. Since, there is no such report about the prevalence of color blindness in Chennai, the present study had been conducted to find out the incidence of color blindness among school children of Chromepet, Chennai. Participant's (n=964, 474 boys, 490 girls, age group 10-19 years) color vision was tested by using Ishihara chart (38 plates). Among 474 boys, 18 boys were color blind with the prevalence of 3.8%. None of girls were found to be color blind out of 18 color blind boys, nine, six and three boys were the victims of deuteranopia, deuteranomaly and protanomaly, respectively.

**Keywords:** Color blindness, Ishihara chart, deuteranomaly, protanomaly, deuteranopia



PAPER-QR CODE

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How to Cite This Article:

Vikram Chellakumar, IJPRBS, 2016; Volume 5(6): 42-44

## INTRODUCTION

Color blindness is an abnormal condition characterized by the inability to clearly distinguish different colors of the spectrum. Human color vision is normally trichromatic, i.e. The mixture of red, green and blue lights. Most color vision defects are congenital and permanent.

Red-Green defects (Protan and Deutan) show the highest prevalence in the general population. Impaired color vision, in the case of red-green color blindness, is genetically determined by X-linked recessive inheritance and thus occurs in males but is transmitted via female and about 8.0% of all women are carrier of it<sup>5</sup>. Being a genetic disorder, the incidence of color blindness varies from race to race and different in the different geographical regions of the world inhabited by people of different ethnicity<sup>2</sup>.

Asian males have a prevalence of color vision defects of 4.9% compared to 0.6% in females. Person with defective color vision are at a disadvantage especially for employment purposes, such as pilots, drivers, in defence services and in technical fields like engineering and medical profession.

The present study had been conducted to find out the incidence of color blindness and racial difference of it among the school children of Chromepet, Chennai.

## MATERIALS AND METHODS

In the present study, six secondary schools were selected randomly. The total number of schools children were 964 (474 boys and 490 girls) from grade 6 to grade 10 with age between 10 and 19 years. The study had been done from January to March 2015. Color vision was tested by using Ishihara Chart ("Ishihara Type Tests for Color Blindness"-38 plates). Subject were asked to sit in a room with sufficient light and read the chart keeping it at 33 cm away from the eyes. The type of color blindness were differentiated with the help of key provided with the chart.

## RESULTS

The distribution of different types of color blindness of the subjects of the present study is:

- Among the boys, 18 were color blind with a prevalence of 3.8%.
- None of the girls were found to be color blind.
- Among the color blind, 9,6 and 3 boys were the victims of deuteranopia, deuteranomaly and protanomaly, respectively.

## DISCUSSION

The percentage distributions of color blindness in different countries are found to be variable<sup>2</sup>. In our finding the prevalence of color blindness among the boys were found to be similar in Japan 3.6%, China 3.7% and American Negro 3.7%, but less than the European Whites 8.0%, America 8.0%, Tehran 8.2%, Korea 5.9% and Singapore 4.8%. However, the prevalence of the color blindness (boys) in our present study is higher than that of Uganda 1.9%, Congo 1.8%, Libya 2.2%, India 2.3%, Colombia 2.4% and China 3.0%<sup>1,3,6,8</sup>.

None of the girls in our study were found to be color blind, which corroborates with some researches done in India, Tibet, Spain, Kenya but in few studies color blindness were detected among girls; in India; (0.1% in Patiala city, 71.1% in Punjab, 2.6 and 0.8% in Aligarh and Shimla)<sup>4,7</sup> 0.4% in Korea and 0.4% in Tehran.

The numbers of subjects in our study though not adequate but our finding corroborates with the observations done earlier.

## CONCLUSION:

Our study concludes that among the students, boys were found to be color blind compared to girls with a prevalence of 3.8%.

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