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Incidence of Red-Green Colour Blindness among the Vehicle Drivers of Habra, West Bengal

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ABSTACT The present study is an attempt to find out frequency of Red-green Colour blindness among different vehicle drivers of Habra, North 24 Parganas, West Bengal. For this 402 Bengali speaking drivers (21-67 years) were selected randomly and tested colour vision by using Ishihara colour vision chart. Participants were classified as per type of vehicles. The study identified that in respect of colour vision status, 96.52percent vehicle bus drivers are normal and 3.48 percent are colourblind. Auto rikshaw drivers exhibits more colourblind (5.56%), followed by Bus (4.46%), truck (4.12%) and magic car drivers (3.5%). However for mini truck drivers and TATA 107 drivers, the frequency of Colour-blind is zero.

INTRODUCTION

Red-green colour blindness is usually inherited, and occurs in about 8 percent of male and only about 0.4 % of female. This is because of the way the genes for the different cone cells are carried on the chromosomes. The genes that lead to red-green colour blindness are on the X chromosome. There are many problems that causes for this colour blindness. Many tasks that we do each day rely on us being able to separate things by their colour. If people are not able to see the difference in colour they have to rely on other differences, which may be harder to pick (Colour Blind Awareness 2017). For example, a person may only be able to tell red and green traffic lights apart by their position (red above green). In normal daylight this may be easy to do, but on a dark, wet night it may be much more difficult to differentiate each colour. Similarly, it may be difficult to notice a red brake light on a car. Because of this, there may be restrictions on driving permits. People with certain kinds of red-green colour blindness may be able to get a car driver's licence but not a commercial driver's licence, or they may have restrictions preventing them from driving at night. In the classroom, blocks or other teaching tools may be colour coded as well as being of different size. A child with colour vision problems may have to rely on size differences alone. On a computer screen, colour is often used for highlighting important words, and the only way some children may know that the words are important is because the shade is slightly lighter or darker. The visible light corresponds to a wavelength range of 400-700 nanometers and colour range of violet through red. The human eyes are not capable of seeing any colour outside these wavelength (Dey et al. 2012).

Some occupational groups will not allow a worker who is colour blind to do certain work (for example, where wiring or warning lights are colour coded) (Womens' and Childrens' Health Network 2013).

There is a dangerous and widespread assumption that colour-blind drivers drive as safely as drivers with normal vision. Colourblind drivers have difficulties recognizing traffic and vehicle signals. However, simple and practical solutions such as changes to the design, colour and shape of signals will aid these drivers (Whillans 1983).

Objective of the Study

The aim of the study is to find out the frequency of Red-green colour vision deficiency of different vehicle drivers of Habra, North 24 Parganas, West Bengal, India.

METHODOLOGY

The study was conducted between February to April 2016 by the first author (SD). The

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Table 1: Frequency of colour blindness among drivers

Types of drivers	*Normal*	*(%)*	*Colourblind*	*(%)*	*Total*
Bus driver	107	95.54	5	4.46	112
Truck driver	93	95.88	4	4.12	97
Mini truck driver	44	100	0	0	44
Auto Rickshaw driver	51	94.44	3	5.56	54
Magic car driver	55	96.50	2	3.50	57
TATA 107 driver	38	100%	0	0%	38
Total	388	96.52	14	3.48	402

study is cross-sectional, field based in nature; and participants of the present study (n=402) are Bengali speaking vehicle drivers (male only) from Habra, North 24 Parganas, West Bengal. People of age group 21-67 years were selected randomly for the present study. The present study is retrospective and data was collected during day light by using Ishihara colour chart following proper testing techniques. If they identify wrong number (specific as per as Ishihara colour chart), then the person is identified as colourblind (Ishihara 2016).

RESULTS AND DISCUSSION

The data was collected from Habra, North 24 Parganas is given here in tabular form with specific statistical analysis. Total numbers of study participants are 402. Within the total study participants of the studied area, the mean age of the vehicle drivers (n=112) is 39.41 ± 10.47 years. In respect of colour vision status 95.54% bus drivers are normal and 4.46% are colourblind. Among truck drivers, 95.88% are normal and 4.12% are colourblind. Among mini truck drivers, all are normal, no one is found as colour blind. Among auto rickshaw drivers, the corresponding figure are 94.44% normal and 5.56% for colourblind. For magic car drivers, 96.50% normal and 3.50% colour-blind and among TATA 107 drivers all are normal (Table 1).

The present study suggests that about 3.48% drivers are colourblind. Prasad et al. (2013) in their study among 140 truck drivers, M.P, India fail to identify single colourblind person, whereas Chakrabarty et al. (2013) in another study among drivers of Delhi, has identified a high proportion (17%) of participants who "performed poor in colour blindness test". Chauhan (2009) found that about 5% truck drivers of Gauhati, Assam, have 'unacceptable colour vision'.

CONCLUSSION

Among drivers, colourblind has greater chances to do accidents because of signal violation. The basic question for a colourblind driver is *"How do you know when to stop at the traffic light?" The answer is "*red is on top, green at the bottom*". However, there are some traffic light from left to right or otherwise. Therefore, it is difficult to identify, rather possibility to mix them. The best thing the Colourblind driver can do is probably identify his 'own' colour for stop or go. Because, Colourblind does not mean that he can't see any colour; but he can see differently which differs in hue, saturation and lightness.*

RECOMMENDATIONS

Whatever is the situation (for example, percentage of colourblind drivers), there should be some sort of mechanism to identify colourblind status before approving driving license. The state government/ Transport department should take initiative for colourblind detection before issuing driving license and awareness among the vehicle drivers regarding colour-blindness. Besides moral support from family and societies is needed to encourage these colourblind people.

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