

# Frequency of refractive errors in bus drivers

## Abstract

**Objective:** To find frequency of refractive errors among bus drivers of Karachi.

**Methodology:** This cross sectional descriptive study was conducted in four different regions of Karachi during 2015, study tools were pretested Questionnaire, visual tests by using Snellen's chart & Ishihara chart.

**Results:** In our sample of 120 drivers 52% were suffering from refractive errors, 24% myopia, 20% presbyopia, 7% hypermetropia, 56% faced accidents, 72% are recommended for spectacles by doctors, and 38 % uses spectacles during driving, only 17% take precautions for eyes during driving. Only 43% have passed through visual assessment before getting driving licenses, 56% drivers have faced accidents. 47% drivers think that refractive errors are major cause of road traffic accidents.

**Conclusion:** The results of this study show that refractive errors are very common among bus drivers and road traffic accidents are related to visual problems of drivers. Drivers got their driving licenses without visual assessment.

**Keywords:** refractive errors, driving license, road traffic accidents

Volume 4 Issue 5 - 2016

Seema N Mumtaz,<sup>1</sup> Ayesha Hameed,<sup>2</sup>  
 Hamaedullah Arif,<sup>3</sup> Muhammad Faisal Fahim,<sup>2</sup>  
 Saqib Hameed,<sup>4</sup> Waleed Akbar<sup>4</sup>

<sup>1</sup>Department of Community Medicine, United Medical & Dental College, Karachi, Pakistan

<sup>2</sup>Department of Research, Al-Ibrahimi Eye Hospital, Isra postgraduate Institute of Ophthalmology, Pakistan

<sup>3</sup>Department of Community Medicine, Bahria University Medical & Dental College, Pakistan

<sup>4</sup>Department of Community Medicine, Hamdard College of medicine & dentistry, Pakistan

**Correspondence:** Muhammad Faisal Fahim M.Sc (Statistics), Department of Research, Al-Ibrahimi Eye Hospital, Isra postgraduate Institute of ophthalmology, Gadap Town, Malir, Karachi, Pakistan, Tel +92-346-3160827, Email faisalfahim88@hotmail.com

**Received:** September 17, 2016 | **Published:** October 28, 2016

## Introduction

Refractive errors are the most common eye disorders and a major cause of visual disability in developing countries. A large number of people do not know that it can be corrected especially in poor communities. The issue is also related to availability and affordability of the refractive services. Moreover socio-cultural aspects also play a significant role in the adoption of the services spectacles. Refractive errors (uncorrected) is one of the most common causes of blindness and low vision worldwide.<sup>1-5</sup> It has been found that "half of all visual impairment is due to refractive error. Studies revealed that the prevalence of refractive error varies from 1% to 8%. Uncorrected Refractive errors are an important cause of visual impairment in many countries. Visual impairment is "defined as visual acuity worse than 6/12 or (logmar=0.5) vision below the standard required for safe use of a motor vehicle". Refractive errors which account mostly for low vision and visual handicap are the third largest cause of preventable/curable blindness in Pakistan.<sup>6</sup> Poor vision is associated with a high rate of motor vehicle accidents. Vision is believed to be one of the most important senses for driving, with around ninety percent of all information received by motorists being visual. Motor vehicle accidents due to poor vision related to underlying refractive errors can easily be prevented if identified and treated without sequel.

As "good visual function is essential to safe driving "it is important to ensure that drivers possess a level of visual ability suitable for the driving task, for their own safety, and the safety all of other road users. Recent studies have shown an increase in the rate of road traffic accidents (RTA) in many developing and developed countries. Poor vision causes greater impairment at night. Particular difficulties include the ability to see pedestrians, road signs, hazards in the road and glare from oncoming vehicle headlights. The situation in Pakistan is such that many lives are lost daily through motor vehicle accidents. According to World Health Organization (WHO) report 40 - 45 million people are blind all over the world and further 135 million people have low vision. As per Pakistan National Blindness and Visual Impairment Survey (2001-2004), the number of blind people in the country is estimated at 1.5 million.<sup>7-12</sup> Blindness prevalence varies

throughout the country, being highest in the provinces of Punjab and Baluchistan and lowest in the North West Frontier Province. Rural Baluchistan has the highest incidence and prevalence of those with visual impairment. Refractive errors occur when the eye is not able to correctly focus images on the retina. The result is blurred vision, which is sometimes so severe that it creates functional blindness for affected individuals. Motor vehicle accidents due to poor vision related to underlying refractive errors can easily be prevented if identified and treated without sequel.

The five most common diseases causing visual impairment in Pakistan are cataract, refractive errors, retinal diseases, glaucoma, and conjunctivitis. In most cases (75% of the cases) the cause of blinding diseases can be surgically and medically corrected, if timely and appropriate treatment is initiated at the first sign of emerging eye problem. There has been no study of the prevalence of refractive errors in a large educational institution such as the College of Medicine. This study is intended to know the frequency of refractive errors among bus drivers of Karachi.

## Material and methods

This cross sectional study was done in four different regions of Karachi during May 2015 to September 2015. All bus drivers of these regions were included in the study.<sup>13</sup> Total of 120 drivers gave their consent and information was taken from them through a pre tested questionnaire. Also visual assessment was done by checking their visual acuity and color vision by the use of Snellen's chart and Ishihara chart respectively. Data was analyzed by Statistical Package for Social Sciences (SPSS) version 19.0. Frequencies and percentages were calculated for variables as age, marital status, driving license presence, driving experience, visual acuity, color vision and others too.

## Results

Out of 120 drivers 52% drivers were suffering from refractive errors. 67% drivers were between the ages of 20-40 years. 73%

drivers were illiterate but drivers with qualification of metric were 3% only. Majority of the drivers were with experience of less than 5 years (Figure1). Majority (93%) drivers were with driving license but only 42% drivers got driving license after visual assessment tests. Fifty six percent drivers had faced accidents. 71% drivers were recommended for spectacles by their doctors which shows refractive errors are common in drivers but only 38% drivers using spectacles during driving. Only 16% drivers were taking precautions for their eyes during driving.<sup>14</sup> By visual acuity test it was found that among 52% drivers who were suffering from refractive errors 24% drivers were suffering from Myopia, 20% drivers were suffering from presbyopia (Figure2). Color blindness was not found in in our sample included drivers.

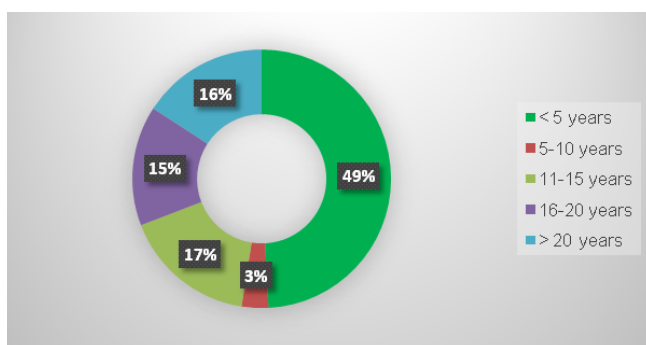


Figure 1 Driving Experience (years).

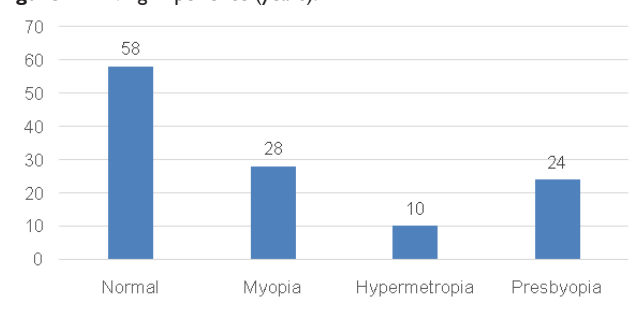


Figure 2 Frequency of Visual Acuity & its type.

## Discussion

In our study we found 52% drivers were suffering from refractive errors of any kind and 48% were with normal vision. 24% drivers were suffering from near sightedness (myopia), it means they feel difficulty in seeing far objects. From our results it is confirmed that out of 120 drivers 57% drivers have faced accidents. Out of these, majority face difficulty in driving because of visual problems. Out of 120 only 17% take precautions for their eyes. 72% drivers are recommended for spectacles by their doctors and only 38% drivers use spectacles during driving. In our sample of 120 drivers, only 42% drivers have passed through visual assessment before getting driving license, while 94% drivers have driving licenses. It is quite unsatisfying that a large no. of drivers have not passed through any visual assessment test before getting license. These people are taking a large number of people on the roads and endangering their lives. 30 % drivers feel difficulty in night time driving, while they still drive in night time. The Pakistan National Blindness and Visual impairment Survey is the largest and most comprehensive population-based eye survey to be conducted in Pakistan, a country of nearly 150 million people. The standardized

prevalence of blindness (ICD-10, presenting <3/60 better eye from all causes) in adults and all age groups were 2.7% and 0.8%.

In our study we found around 67% drivers were between ages of 20-40 years. It means majority of young people are in driving profession and they are suffering from refractive errors. 53% drivers were in favor of regular eye check up of drivers to keep their vision normal and up to mark. In our study we found that 48 % drivers out of 120 were with normal vision, 52 % were facing visual problems (refractive errors ) i-e, myopia 24%, hypermetropia 7% and 20% with presbyopia. 47% respondents (drivers) said that road traffic accidents are caused by visual problems. It is a little bit satisfying that 54% have knowledge that license issuing criteria should be strict. But still a huge ratio of 46% don't think so, the reason behind may be that 74 % are illiterate.

In our study we found that hypertension is common among drivers. These results are very unsatisfying and majority of drivers who are on roads are suffering from visual problems and have faced road accidents. Most of the drivers, who are recommended for use of spectacles, don't use spectacles during driving due to less awareness. They have fear of losing of their source of income. Also, they are confident about lose administration for license checking and supervision. Study by Bekibele, shows proportion of drivers found to have refractive errors was 16.7% but out of these only 56.3% drivers wear glasses while driving, relative frequency of road traffic accidents among drivers was 16.2%, risk was higher among drivers with refractive errors, majority was presbyopic but less numbers were eye glasses wearers, in the same way we also found relatively higher frequency of presbyopia among refractive errors of drivers, but myopia was much high in our results, same results with less number of eye glasses wearers i.e, only 38% out of 71% drivers suffering from refractive errors. Frequency of drivers who had faced road traffic accidents was also very high and it was associated with high frequency of drivers suffering from refractive errors.

## Conclusion

The overall prevalence of refractive errors in drivers was 52%. Strong association between refractive errors in drivers and road traffic accidents was found. Unawareness about refractive errors and their consequences was found in drivers. Counseling about refractive errors in drivers can be useful in order to take precautions for eyes and use of spectacles during driving. And by adopting these measures ratio of road traffic accidents can be reduced. The researchers would like to suggest a training program for these drivers by health care professionals. This can be a useful tool to create awareness and minimize the rate of accidents.

## Acknowledgement

None.

## Conflict of interest

None.

## References

1. Dandona L, Dandona R. What is the global burden of visual impairment? *BMC Med.* 2006;4(6):1–10.
2. Chou CF, Cotch MF, Vitale S, et al. Age-related eye diseases and visual impairment among US adults. *Am J Prev Med.* 2013;45(1): 29–35.

3. Aldebasi Y. Young public's awareness to refractive error deficiency. *Int J Health Sci (Qassim)*. 2011;5(1):9–15.
4. Qayyum S. Refractive state of children in less than five years of age. *J Surg Pakistan*. 2006;11:73–5.
5. Bron AM, Viswanathan AC, Thelen U, et al. International vision requirements for driver licensing and disability pensions: using a milestone approach in characterization of progressive eye disease. *Clin Ophthalmol*. 2010;4:1361–1319.
6. Ayoob M, Dawood Z, Mirza SA, et al. Refractive errors and their relation to age and sex. *Medical Channel*. 2011;17(2):28–31.
7. Pepple G, Adio A. Visual function of drivers and its relationship to road traffic accidents in Urban Africa. *Springer Plus*. 2014;3(1): 47.
8. Bekibele CO, Fawole OI, Bamgboye AE, et al. Prevalence of Refractive Error and Attitude to Spectacle Use among Drivers of Public Institutions in Ibadan, Nigeria. *Ann Afr Med*. 2007;6(1):26–30.
9. Chidi-Egboka NC, Bolarinwa OA, Awoyemi AO. Visual Function Test among Commercial Drivers in a North Central State of Nigeria. *Health Science Journal*. 2015.
10. Road Casualties Great Britain. *Synthesis title: Eyesight and Driving Observatory main category: Drivers*.
11. Silvio P Mariot. Global Data On Visual Impairments. Geneva, Switzerland. World Health Organization; 2010.
12. Erdogan H, Ozdemir L, Arslan S, et al. Prevalence of refraction errors and color blindness in heavy vehicle drivers. *Int J Ophthalmol*. 2011;(3):319–322.
13. Shah SP, Minto H, Jadoon MZ, et al. Prevalence and Causes of Functional Low Vision and Implications for Services: The Pakistan National Blindness and Visual Impairment Survey. *Invest Ophthalmol Vis Sci*. 2008;49(3):887–893.
14. Bekibele CO, Fawole OI, Bamgboye AE, et al. (Prevalence of refractive error and attitude to spectacle use among drivers of public institutions in Ibadan, Nigeria. *Ann Afr Med*. 2007;6(1):26–30.