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Refractive errors, road traffic accidents and long-term spectacle compliance amongst commercial taxi drivers in a major North-East Indian city

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Purpose: To assess the prevalence of refractive error (RE) and its association with road traffic accidents (RTAs) and the subsequent long-term spectacle compliance and adherence to suggested appropriate strategies In Shillong, India. **Methods:** This prospective study was conducted between July and October 2019 among commercial taxi drivers (CTDs), with follow-up interviews conducted with a subset of respondents to assess long-term spectacle compliance after a year. Gross ophthalmologic examination was performed, including visual acuity and refraction. Descriptive statistics and Chi-square tests were conducted to assess the association between the type of REs, spectacle compliance, and selected sociodemographic and clinical variables. Multiple logistic regression was performed for analysis of the association between RTAs and sociodemographic, clinical, and work characteristics variables. **Results:** A total of 382 (95.5%) CTDs completed interviews and gross eye examination. The prevalence of any RE in the worst eye was 28.8% (95% CI: 24.3–33.6). Presbyopia with or without distance vision was the commonest type of RE with 21.7% (95% CI: 17.7%–26.2). Among those who were prescribed spectacles, 70.5% needed near correction. Drivers with RE were nearly two times (OR: 2.6; 95% CI: 1.4–5.1) more likely to be involved in RTAs compared to those without any RE. Long-term spectacle compliance was at 40.9%. The predominant barrier reported for spectacle compliance was "can manage well without spectacles." **Conclusion:** This survey has demonstrated a significant relationship between poor vision and occurrence of RTAs. There is an urgent need for tailor-made targeted interventions to address the eye health needs of CTDs in India.

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The recent data on the global burden of vision impairment (VI) has suggested a reduction in the age-adjusted prevalence of blindness; however, these gains made over the past few decades are at risk due to population growth and the many inadequacies in keeping up with the need.[1] However, estimates on the burden of VI among certain segments of populations such as commercial taxi drivers (CTDs) are scanty, specifically from India. As the majority of people in India rely greatly on commercial modes of transport for commuting between and within cities and towns,[2] understanding the ocular and vision impairment burden among CTDs is crucial and significant from a public health perspective. Many recent studies, emanating predominantly from the African countries, have established a link between poor vision of commercial drivers and road traffic injuries and fatalities.[3-6] However, similar evidence from India is largely absent.

Over 80% of the population in the north-eastern Indian states reside in the rural, isolated communities; in this region, predominantly being a hilly terrain, dependence on private commercial mode of transportation is significantly higher.[2,7] The distribution of road accident fatalities and injuries in India differs from state to state, and interestingly, all of the seven north-eastern states reported more than the national average.[8] A study conducted by Verma *et al*. found that over half of the Indian drivers responsible for road accidents have at least one visual disability.[9] Therefore, understanding the visual traits of CTDs in the region and their association with the occurrence of road traffic accidents (RTAs) is warranted. In accordance with the United Nations Sustainable Development Goal 3.6, which aims at reducing the number of deaths and injuries due to RTA globally by half by the year 2030, this study will help in understanding the role of vision anomalies for possible causes of RTAs in the state of Meghalaya with respect to CTDs and utilize the findings for better preventive interventions.[10] As the calls for universal eye health grow louder, and as we settle into a world reshaped by COVID-19, the need to generate sufficient evidence locally to inform policy is ever greater. Against this backdrop, we present this study from a major capital city in one of the northeast Indian states with the objective of determining the frequency of eye disorders in CTDs and their association with RTAs and the long-term compliance with corrective spectacles usage.

Methods

We conducted a cross-sectional study of CTDs who are registered with the local city transport agency and operated within the city of Shillong during 2019. The study protocol was approved by the Human Ethics Committees of the

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Martin Luther Christian University, Shillong, and appropriate permissions were sought from the city traffic police department, Shillong city. This study adhered to the tenets of the Declaration of Helsinki.

Sample size and selection of participants

Assuming a RE prevalence of 30% from the previous literature in this population,[11] with a statistical significance of 5% and 95% power, 323 CTDs would be required. This was increased to about 400 to account for a 25% attrition rate as CTDs are a highly mobile and difficult-to-reach population. Local CTDs working on taxis registered with the local road transport agency and holding a valid driving license and those aged over 18 years with primary occupation as a taxi driver for at least 3 months prior to the study, and speaking any of three languages—Hindi, Khasi, or English—were considered eligible to participate. A list of all the major commercial taxi hubs within the city was obtained from the regional traffic and road transport department. A total of eight city hubs were identified with a total estimated driver population of 1800, of which five major hubs were randomly selected to represent one each from north, east, south, west, and central hubs. Within these selected hubs, a list of the drivers registered with the driver's union was obtained. Proportional sampling technique was followed to maintain an adequate representation of CTDs to their estimated available numbers at each hub based on this list. A potential respondent was chosen to participate in the study from every 3rd or 5th taxi depending on the sample size required from each hub with the first respondent chosen randomly from the sampling interval. To avoid re-interview, a record of the taxi registration number of the already recruited CTDs was maintained to avoid duplication. Five interviews on average were conducted each day.

Data collection

Potential participants were contacted by a team of two trained investigators during July–October 2019. Written informed consent for participation was sought from each participant, following which the investigators conducted interviews by using a questionnaire designed specifically to meet the objectives of this study. The questionnaire was translated into local languages for administration by ensuring conceptual and semantic equivalence with the English version. The bilingual study research staff worked with a set of CTDs throughout the process of translation and back-translation to address inconsistencies and cultural nuances relevant in this context and to arrive at appropriate wording for those with a low literacy level. Each participant was asked a series of questions about sociodemographic, clinical, and work characteristics. One year after the initial interview, all those taxi drivers who were initially diagnosed with RE and prescribed spectacles were subsequently re-contacted to ascertain spectacle compliance and reasons for non-compliance and a re-assessment of RTA. Initial interviews were conducted in private either in a separate room available at some hubs on request or in many instances inside the taxi to ensure privacy. Immediately following face-to-face interviews, vision screening, refraction, color vision deficiency, and gross eye examination were performed.

Table 1: Sociodemographic and clinical characteristics of commercial taxi drivers

Variable	Categories	Age (Years)			
		Total *n*=382 (%)	<=39 *n*=270 (%)	40-49 *n*=75 (%)	>=50 *n*=37 (%)
Sociodemographic characteristics					
Education	Illiterate	24 (6.3)	14 (5.2)	8 (10.7)	2 (5.4)
	Completed schooling	321 (84)	234 (86.7)	56 (74.7)	31 (83.8)
	Completed college	37 (9.7)	22 (8.1)	11 (14.7)	4 (10.8)
Marital status	Never married	63 (16.5)	57 (21.1)	2 (2.7)	4 (10.8)
	Ever married	319 (83.5)	213 (78.9)	73 (97.3)	33 (89.2)
Self-reported monthly income	INR. 10,000 or less	286 (75.1)	207 (77)	53 (70.7)	26 (70.3)
	INR. >10,000 to 20,000	83 (21.8)	58 (21.6)	14 (18.7)	11 (29.7)
	INR. > 20,000	12 (3.1)	4 (1.5)	8 (10.7)	0 (0)
Clinical characteristics					
Uncorrected visual acuity in the better eye*	Mild or no VI	374 (97.9)	263 (97.4)	75 (100)	36 (97.9)
	Moderate VI	7 (1.8)	6 (2.2)	0 (0)	1 (2.7)
	Severe VI	0 (0)	0 (0)	0 (0)	0 (0)
	Blindness	1 (0.3)	1 (0.4)	0 (0)	0 (0)
Binocular near vision	N6	295 (77.2)	262 (97)	32 (42.7)	1 (2.7)
	N8–N12	75 (19.6)	7 (2.6)	40 (53.3)	28 (75.7)
	N18–N36	12 (3.1)	1 (0.4)	3 (4)	8 (21.6)
Preliminary diagnosis in the field	Anterior segment/corneal/suspected retinal changes	41 (10.7)	32 (11.9)	8 (10.7)	1 (2.7)
	Refractive error	110 (28.8)	29 (10.7)	46 (61.3)	35 (94.6)
	Cataract	2 (0.5)	1 (0.4)	0 (0)	1 (2.7)
	Pterygium	2 (0.5)	1 (0.4)	1 (1.3)	0 (0)
	Normal	227 (59.4)	207 (76.7)	20 (26.7)	0 (0)
Binocular color vision	Normal	369 (96.6)	261 (96.7)	72 (96)	36 (97.3)
	Defective	13 (3.4)	9 (3.3)	3 (4)	1 (2.7)

* Grades of visual acuity measured as per the ICD-10 classification[12]

Table 2: Work and behavioral characteristics of commercial taxi drivers

Variable	Categories	Age (Years)			
		Total *n*=382 (%)	<=39 *n*=270 (%)	40–49 *n*=75 (%)	>=50 *n*=37 (%)
Experience driving taxi (years)	≤5 years	98 (25.7)	94 (34.8)	3 (4)	1 (2.7)
	6–10 years	117 (30.6)	101 (37.4)	11 (14.7)	5 (13.5)
	11–15 years	58 (15.2)	47 (17.4)	9 (12)	2 (5.4)
	>15 years	109 (28.5)	28 (10.4)	52 (69.3)	29 (78.4)
Vehicle ownership	Owned	139 (36.4)	86 (31.9)	38 (50.7)	15 (40.5)
	Rented	243 (63.6)	184 (68.1)	37 (49.3)	22 (59.5)
Met with an accident in the last one month	Yes	113 (29.6)	75 (27.8)	28 (37.3)	10 (27)
	No	269 (70.4)	195 (72.2)	47 (62.7)	27 (73)
Overall quality of sleep in the last one month	Poor/Moderate	50 (13.1)	33 (12.2)	11 (14.7)	6 (16.2)
	Good/Excellent	332 (86.9)	237 (87.8)	64 (85.3)	31 (93.8)
Trouble staying awake while driving in the last one month	Yes	69 (18.1)	48 (17.8)	16 (21.3)	5 (13.5)
	No	313 (81.9)	222 (82.2)	59 (78.7)	32 (86.5)
Difficulty judging distance correctly while driving in the last one month	Yes	31 (8.1)	18 (6.7)	11 (14.7)	2 (5.4)
	No	351 (91.9)	252 (93.3)	64 (85.3)	35 (94.6)

Table 3: The prevalence of different combinations of distance and near vision problems in commercial taxi drivers

Type of refractive error in the worst eye	Number of commercial taxi drivers	Percentage (%)	95% CI	Age (%)			*P*
				<=39 years	40-49 years	>=50 years	
Myopia with or without astigmatism + presbyopia	8	2.1	0.9-4.1	2 (0.7)	4 (5.3)	2 (5.4)	0.016
Hyperopia with or without astigmatism + presbyopia	3	0.8	0.2-2.3	0 (0)	1 (1.3)	2 (5.4)	0.002
Simple astigmatism + presbyopia	2	0.5	0.1-1.9	0 (0)	2 (2.7)	0 (0)	0.016
Myopia with or without astigmatism (no presbyopia)	25	6.5	4.3-9.5	18 (6.7)	5 (6.7)	2 (5.4)	0.957
Hyperopia with or without astigmatism (no presbyopia)	3	0.8	0.2-2.3	0 (0)	1 (1.3)	2 (5.4)	0.002
Simple astigmatism (no presbyopia)	1	0.3	0.01-1.5	1 (0.4)	0 (0)	0 (0)	0.812
Presbyopia with or without distance vision deficiency	83	21.7	17.7-26.2	4 (1.5)	45 (60)	34 (91.9)	<0.001
Any refractive error	110	28.8	24.3-33.6	29 (10.7)	46 (61.3)	35 (94.6)	<0.001

CI denotes confidence interval

All ophthalmic evaluations were performed by trained optometrists. The average interview and eye evaluation time was 45 min. A standard Snellen tumbling E-chart was used to assess visual acuity, which was viewed at a distance of 6 m. All measurements were taken in full daylight with available correction. Near vision was checked with n-notation chart at habitual reading distance to arrive at near power. General anterior segment screening was done using a torchlight followed by a detailed posterior segment evaluation using a direct ophthalmoscope by a trained optometrist. Color vision was assessed using the Ishihara pseudo isochromatic plates containing 21 plates.

Definitions

Measures of VI were classified into six broad categories as defined by the International Statistical Classification of Diseases and Related Health Problems (ICD-10).[12] Two criteria were considered to define presbyopia: (i) near vision worse than N6 or N8 at 40 cm and (ii) near addition power of + 0.75 diopter sphere (DS) and more in one or both eyes; either of these two criteria was taken.[13-18] Myopia was defined as spherical power ≥ −0.5 DS, hyperopia as spherical power ≥ +0.5 DS, simple astigmatism as spectacle cylinder prescription having cylinder power ≥ 0.75 diopter cylinder (DC) with spherical power being plano or ± 0.25 DS, myopia with astigmatism as spectacle cylinder prescription having cylinder power ≥ 0.75 DC with spherical power ≥ –0.50 DS, and hyperopia with astigmatism as spectacle cylinder prescription having cylinder power ≥ 0.75 DC with spherical power ≥ +0.50 DS. No RE was defined as plano power or ± 0.25 spherical or cylinder power.[14-18] Patients who were not offered refraction due to presence of ocular comorbidities and subsequently referred to the nearest base hospital were categorized as undetermined.

Data analysis

Microsoft Office Excel 2013 and SPSS software (version 20.0, IBM SPSS Science Inc., Chicago, IL) were used for data analysis. Descriptive statistics are reported for relevant quantitative variables. Chi-square tests were conducted to assess the association between the type of RE, occurrence of RTAs, and barriers for non-compliance with select sociodemographic, clinical, and work characteristics variables. Multiple logistic regression was also performed for the associations of RTAs in CTDs with various sociodemographic, clinical, and work-related characteristics. $P = 0.05$ was considered as statistically significant for all the estimates. 95% confidence intervals (CI) are reported as appropriate.

Table 4: Type of spectacles prescribed amongst taxi drivers with different combinations of distance and near vision problems and the spectacle compliance and history of RTA*

Type of refractive error in the worst eye	Number of drivers advised spectacles	Number successfully re-contacted (%)	Spectacle compliance numbers				Long-term spectacles compliance (%)	History of RTA in the last month**	
			Distance	Near	Bifocal	Total		Before spectacle provision (%)	After spectacle provision (%)
Myopia with or without astigmatism + presbyopia	8	5 (62.5)	0	1	3	4	50	6 (75)	0 (0)
Hyperopia with or without astigmatism + presbyopia	3	1 (33.3)	0	0	1	1	33.3	2 (66.6)	0 (0)
Myopia with or without astigmatism (no presbyopia)	25	19 (76)	5	1	3	9	36	12 (48)	0 (0)
Hyperopia with or without astigmatism (no presbyopia)	3	1 (33.3)	0	0	1	1	33.3	2 (66.6)	0 (0)
Presbyopia with or without distance vision deficiency	83	66 (79.5)	0	35	4	39	46.9	33 (39.7)	0 (0)
Any refractive error	110	85 (77.3)	6	35	4	45	40.9	44 (40)	0 (0)

* Percentages provided are amongst those who were successfully re-contacted. ** History of RTA presented for CTD who were diagnosed with any type of RE in the worst eye

Results

A total of 400 CTDs aged 18 years or older were recruited for the study from five hubs of whom 382 (95.5%) completed interviews and underwent gross eye examination.

Sociodemographic and clinical characteristics

Of the 382 participants, 270 (70.7%) were aged 39 years or younger. The median age of drivers was 34 years (range: 18–72 years). The majority of the drivers were ever married (n = 319, 83.5%), and about 84% completed schooling. According to eye examination results, a total of 110 (28.8%) had RE, about 10% of drivers exhibited anterior segment/corneal/suspected retinal changes in the eye, and cataracts were diagnosed in two (0.5%) drivers. A significantly higher proportion of CTDs had no or mild VI (n = 374, 97.9%). Binocular near vision of N8 or worse was 22.7% (n = 87) and increased with age ($P < 0.001$). The prevalence of defective color vision was 3.4% (95% CI: 1.8–5.7) [Table 1].

Work and behavioral characteristics

The median duration of work as a taxi driver was 10 years (range: 1–50 years), with about two-thirds operating on rented taxis. About 30% (n = 113) of CTDs reportedly met with an accident in the past 1 month. The majority of drivers reported having good or excellent quality of sleep in the last month, with 69 (18%) drivers reported to have trouble staying awake while driving. About 8% of CTDs reported difficulty judging distance correctly while driving during the past month [Table 2].

Refractive errors and prescription of spectacles

The grades of different types of RE are presented in Table 3. Using the spherical equivalent, the overall prevalence of any RE in the worse eye was 28.8% (95% CI: 24.3–33.6) and increased significantly with age ($P < 0.001$). The prevalence of myopia with or without astigmatism was 2.1% (95% CI: 0.9–4.1) and increased significantly with increasing age ($P = 0.016$). The prevalence of hyperopia with or without astigmatism plus presbyopia was 0.8% (95% CI: 0.2–2.3) and increased significantly with age ($P = 0.002$). The prevalence of presbyopia with or without distance vision deficiency was 21.7% (95% CI: 17.7–26.2) and increased significantly with age ($p < 0.001$) [Table 3].

Re-contact with commercial taxi drivers, spectacle compliance, and road traffic accidents

The long-term follow-up and compliance of spectacles by CTDs belonging to different RE categories are given in Table 4. The highest number of CTDs who were successfully re-contacted after a year of provision of spectacles were those who were prescribed presbyopic spectacles (79.5). The highest compliance of glasses was by taxi drivers who were predominantly myopic with presbyopia (50%, $P < 0.001$), followed by those drivers who were presbyopic with or without distance vision (46.9%, $P < 0.001$). The long-term spectacle compliance rate among drivers with any type of RE in at least one eye was 40.9%. Prior to RE correction, the highest rates of RTA were predominantly among those who had uncorrected myopic with presbyopia (75%, $P < 0.001$), followed by those with uncorrected hyperopia and presbyopia (66.6%, $P < 0.001$). Just about 33 CTDs were successfully re-contacted who were prescribed corrective spectacles, and none reported having a history of RTA post spectacle provision [Table 4].

Refractive error and road traffic accidents

Of the 382 CTDs, 113 (29.6%, 95% CI: 25.1–34.4) drivers were reportedly involved in RTAs in the past 1 month. The effects of demographic, clinical, and work-related variables with the

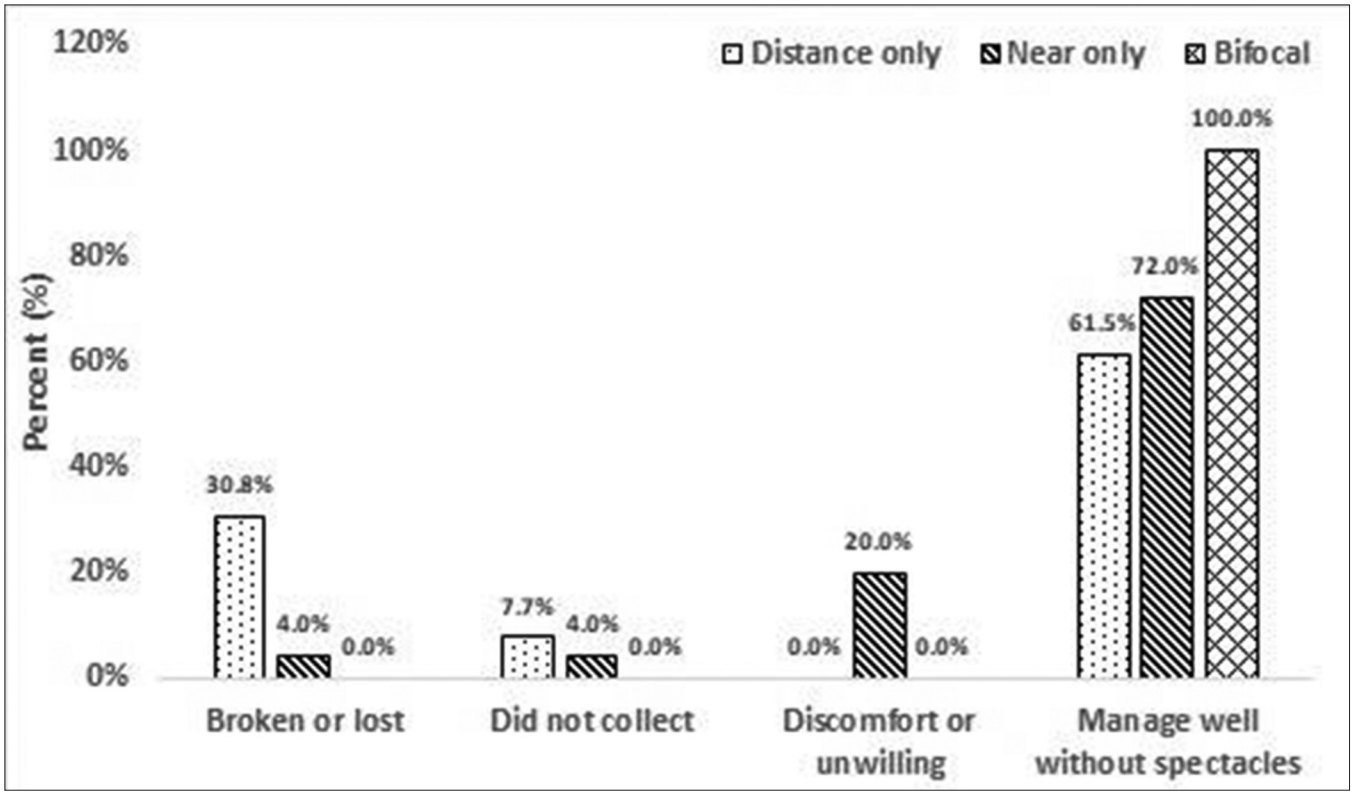

Figure 1: Reasons for long-term spectacle non-compliance among taxi drivers who were prescribed spectacles

Table 5: Multiple logistic regression analysis showing the relationship between some independent characteristics and occurrence of road traffic accident (RTA)

Variable	Total (%) (*n*=382)	Met with an accident in the past month (% of total)	Adjusted odds for the occurrence of RTA (95% CI)
Age*			
≤39 years	270 (70.7)	75 (66.4)	2.2 (0.8-5.7)
40-49 years	75 (19.6)	28 (24.8)	2.1 (0.8-5.3)
>50 years	37 (9.7)	10 (8.8)	1.0
Education†			
Illiterate	24 (6.3)	9 (8)	1.0
Completed schooling	321 (84)	98 (86.7)	0.7 (0.3-1.9)
Completed college	37 (9.7)	6 (5.3)	0.3 (0.1-0.9)
Any refractive error in at least one eye‡			
No	272 (71.2)	69 (61.1)	1.0
Yes	110 (28.8)	44 (38.9)	2.6 (1.4-5.1)
Overall quality of sleep during the past month§			
Good/Excellent	332 (86.9)	92 (81.4)	1.0
Poor/moderate	50 (13.1)	21 (18.6)	1.4 (0.7-2.8)
Trouble staying awake while driving in the past month¶			
No	313 (81.9)	82 (72.6)	1.0
Yes	69 (18.1)	31 (27.4)	2.2 (1.3-4.0)
Difficulty judging distance correctly while driving during past month**			
No	351 (91.9)	100 (88.5)	1.0
Yes	31 (8.1)	13 (11.5)	1.1 (0.5-2.4)

CI is confidence interval. * Chi-square test for significance: *P*=0.001. † Chi-square test for significance: *P*=0.133. ‡ Chi-square test for significance: *P*=0.004. § Chi-square test for significance: *P*=0.031. ¶ Chi-square test for significance: *P*=0.002 ** Chi-square test for significance: *P*=0.048

occurrence of RTAs are presented in Table 5. With multiple logistic regression, those with RE in at least one eye (OR: 2.6; 95% CI: 1.4–5.1), those reporting trouble staying awake while driving during the past month (OR: 2.2; 95% CI: 1.3–4.0), and CTD aged 39 years or younger (OR: 2.2; 95% CI: 0.8–5.7) were significantly more likely to have experienced RTA in the past month [Table 5].

Barriers to long-term spectacle compliance

The type of spectacles provided and its association with long-term non-compliance are illustrated in Fig. 1. Upon further investigation to assess the barriers for spectacle compliance, "can manage well without spectacles" was reported as the major reason for non-compliance (distance: 61.5%; near: 72%; bifocal: 100%) among taxi drivers [Fig. 1].

Discussion

The northeastern Indian region, because of its geographical location, difficult terrain, extreme weather patterns, and vast hilly region, proves to be a deterrent in the provision of normal health care services to people of the region.[19] Given the difficult geographic terrain, CTDs play a crucial role in the day-to-day operation of business and tourism as a main means of transport for those who are unable to use other modes of public or private transport. Unfortunately, despite the significant role they play in these communities, CTDs themselves have been the subjects of little published research. We report data on REs, attributes of occurrence of RTAs, and long-term spectacle compliance pertaining to CTDs in a major northeast Indian capital city. A little over a quarter (28.8%) of all CTDs screened in this study were diagnosed with RE, with presbyopia with or without distance vision deficiency being the predominant type of RE followed by myopia. Our findings on the prevalence of RE in this population were consistent with a previous similar investigation conducted in several Indian metropolitan cities that reported a 30% RE prevalence among commercial drivers.[11] Most of the scientific evidence on the ocular morbidities including RE among commercial drivers emanate from African countries which report a RE prevalence ranging from 30% to 60%.[4,20-24] Higher rates of RE reported in all of these various studies, including ours, make CTDs a priority group for targeted eye-care interventions. Owing to their constant mobile and busy lifestyles, CTDs are quite often unable to utilize the existing health care systems. Intensive and targeted efforts to reach out to this population at the designated taxi hubs through mobile eye screening clinics/vans seem a viable approach to reach out to this group, although a scientific investigation into such an approach is warranted.

About 30% of CTDs in our study reported experiencing RTAs in the past month. These include both minor as well as major events that involved either a moving or a stationary object or pedestrians. Evidence from other parts of the world reveal a varying degree of RTA prevalence ranging from 22.7% to 75%, with alcohol intoxication, driver fatigue, speedy driving, receipt of prior traffic punishment, and driving a mechanically faulty taxi significantly associated with increased risk of RTA.[25-29] Two recent studies from Africa have reported a strong association between poor vision among drivers and RTA.[22,28] Findings from our study highlight a clear and significant association between RE and RTA. CTDs with any type of RE in at least one eye had the highest odds of experiencing RTAs. In India, two-thirds of road traffic injury (RTI) deaths are reported in the age group of 15–44 years.[30] Though the state of Meghalaya ranked low at number 28 among Indian states based on the number of RTAs in the year 2018, more work is needed to reduce the number of fatalities resulting from RTAs.[31] This study found a positive correlation between occurrence of RTA and poor vision and the driver's ability to stay awake while driving. Specific interventions to address these issues would be beneficial to the drivers. Although all of drivers in this study had a valid driver's license, only 22.8% (n = 87) reportedly got their eyes examined while getting their licenses renewed. Therefore, enforcing strict adherence to the mandatory rules regarding driver license renewal is warranted. Periodic eye screening camps targeting CTDs organized by local government, local charitable eye hospitals, and non-government organizations would address the poor eye health needs of this population. The role of road safety awareness generation activities and sustained information, education and communication (IEC) initiative may encourage more CTDs to get periodic eye examinations, although a scientific investigation to ascertain the impact of such an intervention is warranted.

Long-term spectacle compliance was relatively low among CTDs, and the trends indicate that compliance improved with age. Spectacle coverage is one of the important impact indicators for primary eye care services. There is, however, a severe dearth of information on spectacle compliance among CTDs. A study done among multiple locations of the national capital region of India revealed low spectacle usage among heavy vehicle truck drivers.[32] A descriptive qualitative study among commercial drivers from the Indian state of Odisha reports that 92.3% of the respondents replied in the negative about their usage of recommended glasses.[33] To the best of our knowledge, no other study has been done in India regarding long-term spectacle compliance among CTDs. The predominant barrier for spectacle non-compliance reported in this study was "can still manage well without spectacles." The majority of CTDs were prescribed either near-vision or bifocal lens, which did not affect their driving-related tasks, which may explain why CTDs reported this barrier. A dedicated counselor at eye screening camps targeting CTDs coupled with intensive IEC strategies targeting CTDs would negate the many misconceptions pertaining to spectacle usage and encourage them to use spectacles, thereby improving compliance.

Our study has certain limitations. CTDs are highly mobile owing to the nature of their work; thus re-contacting them to assess long-term spectacle compliance was a huge challenge. The compliance data reported in this study was limited and thus needs to be interpreted with caution. Certain subjects who were diagnosed with myopia may require to undergo dilated fundus examination by an ophthalmologist to rule out retinal anomalies, which was not done in this study. Because all ophthalmic visual functions were conducted in field settings, this did not allow us to examine the field of vision, glare, contrast sensitivity, and dark adaptation of the subjects, which require an examination in the clinic. Another limitation of this study includes selection bias and recall bias. Taxi drivers are a highly mobile population, which can create inconsistency in the selection of study participants by using proportional random sampling. The study was based on self-reporting of past RTAs and work-related characteristics and therefore may have been subject to recall bias.

Conclusion

In conclusion, over a quarter of CTDs have RE with presbyopia with or without distance vision deficiency being the predominant type of RE diagnosed. Long-term spectacle compliance was low. CTDs with RE were nearly two-and-a-half times more likely to be involved in RTA when compared with those without RE. Targeted interventions specifically designed to address the eye health needs of CTDs that include mobile clinics and intensive and targeted awareness and IEC strategies and counseling can be a way forward.

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Conflicts of interest

There are no conflicts of interest.

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