AN ASSESSMENT OF ORAL HEALTH STATUS AND TREATMENT NEEDS OF PROFESSIONAL BUS DRIVERS IN CHENNAI

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DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation titled **"An Assessment Of Oral Health Status And Treatment Needs Of Professional Bus Drivers In Chennai"** is a bonafide and genuine research work carried out by me under the guidance of **Dr. P.D. Madan Kumar MDS,** Reader , Department of Public Health Dentistry, Ragas Dental College and Hospital,Chennai.

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ABSTRACT

Background:

The present study was conducted to assess the oral health status and treatment needs of professional bus drivers in Chennai.

Objectives:

- To assess the oral hygiene practices, practices related to use of tobacco products, utilization of dental care services and work related stress among the Government and private bus drivers in Chennai using a pre-tested questionnaire.
- To assess the oral health related quality of life among them using oral health impact profile- 14 questionnaire.
- To assess and compare the oral health status and treatment needs of Government and private bus drivers in Chennai using WHO Oral Health Assessment Proforma 1997.

Methodology:

A cross-sectional descriptive study was conducted to assess the oral health status and treatment needs of 860 professional bus drivers in Chennai. Data was collected using a survey proforma which comprised of a pre tested questionnaire, Oral Health Impact Profile 14 questionnaire and WHO Oral Health Survey – Basic Methods Proforma (1997). The data was subjected to statistical analysis.

Results:

Results showed that majority 454(52.8%) of the drivers have completed secondary school education. The mean age of the study population was 40.25

years. The mean monthly income of the study population was Rs.10,822.785. With regards to sweet score, majority of them, 739(85.9%) drivers were in 'watch out zone'. There was significant correlation between sweet score and DMFT (p = 0.000). A large percentage of the drivers, 317(36.9%) had not visited dentist before. Of those who have visited, 251(29.2%) drivers had visited dentist for extraction. 524(60.9%) drivers felt stress at work. The mean Oral Health Impact Profile score of the study population was 7.915. There was statistically significant association between OHIP and DMFT, CPI, LOA, oral mucosal lesions, prosthetic status among the study population. A very high prevalence of periodontal disease was observed in this population and none of the workers had healthy periodontium. The mean DMFT was 5.53. 22(2.6%) drivers had prosthesis in the upper arch and 22(2.6%) drivers had prosthesis in the lower arch. 197(22.9%) drivers needed prosthesis in the upper arch and 292(34%) drivers needed prosthesis in the lower arch.

Conclusion:

The oral health status of bus drivers was poor with high prevalence of periodontal disease and dental caries. Further studies may throw more light in this field to gain a more detailed understanding of oral health needs of professional bus drivers.

Key words:

Bus drivers, oral health status, WHO oral health proforma, Oral Health Impact Profile.

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INTRODUCTION

Health is a valuable asset not only for an individual, but also for the social system. A nation may progress more rapidly when the population are healthier and lead a productive life.[1]

As man entered the modern era he had been exposed to newer life styles, lack of physical activity, stressful working conditions and adverse habits like smoking, alcohol consumption, change in dietary habits which may have an adverse effect on his general as well as oral health.

Oral health contributes to personal well being and quality of life. It plays an important role in the pursuit of health, health promotion of an individual and thus for the whole community. Oral diseases are not self healing and cannot be cured by drugs or advice alone. Several conceptual models of varying complexity have been proposed in an attempt to explain oral diseases, particularly dental caries and periodontal diseases. Oral diseases are multifactorial in nature and affects humans of all ages and in all regions of the world; practically no individual in the course of a life time can escape from oral problems.[2] Thus health as well as oral health problems are common to one and all.

Lifestyle plays a major role in influencing these problems. In metropolitan cities, the life of common man is highly stressful because of the mechanical life they are compelled to live. Several cities have different mode of conveyance for the public. In most of the Metropolitan cities, State Government will be providing

transport facilities to the people. In cities also local transport network will be operating with the help of Government and private companies.

Chennai is the metropolitan capital of Tamilnadu having a population of more than 8 million according to the 2011 national census. Since the city is wide spread, spanning to around 1172 sq. km, travelling from one place to another becomes inevitable because of a variety of reasons including profession, study, recreation etc.

In Chennai city also, public transport system plays a vital role in the transportation of the general public. Among the public transport system used, buses are the major mode of transportation preferred by many people because of its cost effectiveness.

The **Metropolitan Transport Corporation** (MTC) is the agency that operates the public transport bus service in Chennai, India. It is owned by the Government of Tamil Nadu. It transports an estimated 5.86 million passengers every day with its fleet of 5000 + buses. Number of routes operated are 1662 with trips of about 42 per day. There are 26 depots where about 9000 drivers are employed. Total distance covered per day is 800,000 km (in the city and the suburbs)

Other than the State run buses, there are various private bus fleet services that operate to cities such as Coimbatore, Madurai, Trichy, Tirupathy, Salem and Bangalore etc. The private bus drivers differ from the MTC drivers in that they travel long distance particularly during night time from Chennai to reach other

cities. Moreover they have more time off and less traffic problems. Thus they have better working environment.

Since there are less buses available , the bus drivers have to shuttle tirelessly to cater to the public needs. The various factors like work shift, working environment, working posture, handling heavy materials, job stress due to overloading and long working time and limited time off have a significant adverse effect on the health among drivers. The work load of drivers have a great amount of nervous psychological tension connected with the driving of the vehicle as well as they are affected by stress, mechanical vibration, shock, evaporation from the fuel, impact of high degree of temperature, noise and pollution . Studies in the past have shown that drivers are at an increased risk of developing several types of cancers and this may be invariably due to the air pollution during working hours or due to other risk factors, primarily smoking and alcohol consumption.[3]

Hence for bus drivers, in addition to general health, oral health also suffers because of the relative lesser importance given to it. The use of products related to tobacco and poor oral hygiene practices adds to the oral disease burden among this population. The present data available on oral health status of professional bus drivers in India is insufficient to design proper dental care delivery to meet their oral health care needs. Since a comprehensive dental health promotion program for the professional bus drivers will improve their quality of life, this study was contemplated to assess the oral health status and treatment needs among professional bus drivers in Chennai.

AIM AND OBJECTIVES

Aim:

To assess the oral health status and treatment needs of professional bus drivers in Chennai

Objectives:

- To assess the oral hygiene practices, practices related to use of tobacco products, utilization of dental care services and work related stress among the Government and private bus drivers in Chennai using a pre-tested questionnaire.
- To assess the oral health related quality of life among them using oral health impact profile- 14 questionnaire.
- To assess and compare the oral health status and treatment needs of Government and private bus drivers in Chennai using WHO Oral Health Assessment Proforma 1997.

REVIEW OF LITERATURE

Yoshida Y, Ogawa Y, Imaki M et al (1997)[4] studied the association between lifestyle and periodontal disease among 1,821 factory workers, 20-69 years of age in Japan. The results showed that age and sex were strongly associated with the CPITN score. In the male factory workers, the CPITN scores of each age group were significantly greater for smokers than for non smokers; mean 2.41 and 2.28 respectively. The CPITN scores were also greater in high consumption and long duration smokers, compared to low consumption and short duration smokers. It was concluded that sex, aging and smoking are risk indicators for periodontal disease.

Hayashi N, Tamagawa H, Tanaka M et al (2001)[5] studied the association of tooth loss with psychosocial factors in male Japanese employees. The study was conducted in 252 workers of age 20 – 59 years. The results showed a significant increasing trend with age. The mean tooth losses was 0.32 in the 20–29 year old group,0.82 in the 30-39 year old group,1.28 in the 40–49 year old group and 2.91 in the 50 – 59 year old group. Bivariate analysis revealed that age ($P<0.01$) and alexithymia ($P<0.05$) were significantly associated with tooth loss. In contrast, work stress, depression, type A behaviour, job and life satisfaction were not significantly associated with tooth loss. In multivariate analyses, the associations of age ($P<0.02$) and alexithymia ($P<0.05$) remained statistically significant after adjustment for oral health behaviour and lifestyle variables. It was concluded that an alexithymic personality may affect tooth loss status in male employees.

Ahuja A, Darekar HS (2003)[6] assessed the oral health status and treatment needs of 1200 army personnel of age group 16 – 56 years in Pune. The results showed that the mean DMFT was found to be 0.74. In cantonment A, 48.8% had healthy periodontal status, 0.96% had bleeding on probing, 42.07% had calculus, 5.29% had shallow pockets and 2.88% had deep pockets. In cantonment B, 74% had healthy periodontium, 2% had bleeding on probing, 23% had calculus, 1% had shallow pocket. In cantonment C, 58.85% had healthy periodontium, 0.78% had bleeding on probing, 31% had calculus, 7.29% had shallow pockets and 2.08% had deep pockets. TN1 was required for 0.96% in cantonment A, 2% in cantonment B, 0.78% in cantonment C. TN2 was required for 47.35% in cantonment A, 24% in cantonment B, 38.28% in cantonment C. TN3 was required for 2.89% in cantonment A, 2.08% in cantonment C. Prosthesis were required for 10.4% of army personnel.

Dilip CL (2005)[7] studied the health status, treatment requirements, knowledge and attitude towards oral health of police recruits in Karnataka. A total of 1293 police recruits / trainees in the age group of 19 – 57 years, attending 8 police training schools in Karnataka were included. The results showed that 74% subjects suffered from dental caries and the prevalence of decayed teeth (DT) increased with age. Missing teeth (MT) was pronounced in the 48 – 57 years age group and DT was more commonly seen in 18 – 27 year age group. The percentage of subjects affected by D,M & F were 69%, 15% and 4% respectively. 91% subjects suffered from some form of periodontal disorder and the severity increased with age. The number of healthy sextants were more in 18 – 27 year age group than in other age groups. The frequency of visit to the dentist – once a year,

accounted for 33% and rurally located schools recorded 23% and 33% cleaned their teeth once a day and the average at the urban schools was higher than at rurally located schools. The association between diet and dental caries and periodontal disease was statistically significant.71% subjects required restorative care.

Zinser VA, Irigoyen ME, Rivera G, Mazupome G, Perez LS, Velazquez C (2008)[8] studied the association between cigarette smoking and dental caries among professional truck drivers in Mexico. The study was conducted among 824 truck drivers who were enrolled in the validation of their federal licenses in Mexico city during the interval September 2004 – August 2005.The results showed that 49.2% were current smokers and 23.2% were former smokers. Caries experience was mean DMFT 8.95 (± 6.05).Only 18.0% of participants had ‘ excellent ‘ or ‘ good ‘ oral hygiene. The prevalence of ‘ large ‘ cavities increased as the number of cigarettes/day increased from 14.6% (1–3 cigarettes/day) to 33.3% (≥10 cigarettes/day). It was concluded that older age, poorer oral hygiene, higher education, and greater tobacco exposure were significantly associated with higher caries experience (DMFT)

Sandoval RM, Puy CL (2008)[9] assessed the periodontal status and treatment needs among Spanish military personnel. The sample was composed of 387 military personnel from the general almirante base at marines, Valencia. The results showed that all sextants were healthy in 7.2% of the sample. The most prevalent condition was the presence of calculus especially in the younger population.7.8% had 4 – 5mm periodontal pockets and 2.3% had pockets of 6mm or more, all in the over – 25 age group. The women below 25 years of age were

significantly more healthy than the men. The healthy sextants mean was 2.38, without differences by rank. Privates presented a higher mean for sextants with bleeding, while officers and non-commissioned officers presented a higher average number of sextants with pockets. Every subject needed oral hygiene instructions and scaling and root planning but only 2.3% all over 25 years old, required complex treatments. The estimated treatment time need was 1.04 hour per person per year.

Chandra MK, Jayakumar HL, Vanishree N (2009)[10] studied the oral health status and treatment needs among Bank Employees in Bangalore city. The study was conducted among 1312 Bank Employees from 55 Banks. The results indicated that majority of them were moderately stressed out (69.1%) due to their nature of work. The stress levels were associated with development of periodontal disease and dental caries. There was a positive correlation found between the increase in age and progression of periodontal disease ($P<0.001$) and dental caries ($P<0.001$). It was concluded that the Bank Employees find very little time to relax during their busy work schedule. Thus by advocating necessary changes at their work place like reducing abnormal stress and providing them a harmonious environment, the cumulative effect of oral diseases can be intercepted at the earliest.

Sutthavong S, Caengow S, Rangsin R (2009)[11] conducted an oral healthy survey of military personnel in the Phramongkutklao hospital, Thailand. The dental records of about 4,662 new patients at Phramongkutklao hospital from January to December 2003 were reviewed. 69.7% were civilians, and 30.3% were military personnel which included 23.6% commissioned officers, 15.3% non

commissioned officers, 44.8% conscripts and 16.3% retired officers. The results showed that the military personnel had higher rates of tooth ache (OR=1.27, 95%CI=1.08–1.47) and gum swelling (OR=1.41, 95% CI=1.07–1.84) than the civilians. Military personnel showed increased risk of having pulp and periapical diseases (OR= 1.23, 95% CI=1.05–1.44) and fracture teeth (OR=1.44,95%CI = 1.04 – 1.97) more than civilians. Only 1.21% of the active duty military personnel required no dental retirement. It was concluded that the military personnel, especially the conscripts had a relatively high prevalence of oral diseases and higher treatment needs than the civilians expect for removal of impacted teeth.

Reddy CS, Reddy CVK (2010)[3] conducted a study to assess the oral health and treatment needs of Karnataka state road transport drivers and employees in Mysore. The study was conducted among 1434 members of 4 groups of employees namely drivers, conductors, workshop mechanics and administrative staff in 6 depots of rural division and 4 depots of urban division. The results showed that the prevalence of dental caries was higher (45.7%) among drivers than the other employees (37.2%).The prevalence of periodontal disease was also higher among drivers (72.3%) than the other employees (61.6%).This difference was due to a higher percentage of smokers among drivers (44.7%) than other employees (23.6%).The difference in caries prevalence may be due to a higher amount of sweet consumption (47.9%) and poor oral hygiene practices (80.3%) among drivers as compared to the other employees (25% and 73.2%). 38.5% of the drivers needed restorations whereas 42.1% conductors, 46.4% mechanics, and 42.7% office staffs needed restorations. The percentage of drivers

needing extractions was 85.7% as compared to 76.9% conductors, 82.5% mechanics and 79% office staffs.

Naveen N, Reddy CVK (2010)[2] conducted a study to assess the oral health status and treatment needs of police personnel in Mysore. The study was conducted among 1207 police personnel who were divided into police constables (PC), Head constables (HC) and officials according to their designation. The age group of the study population was between 18–58 years. The results revealed that the prevalence of periodontal disease was 99.7% and was directly associated with age. Prevalence of dental caries was 67.2% and total DMFT was 2.62.The stress level was severe in 22.8% and moderate in 77.2%. Almost all the study subjects required one or the other form of periodontal treatment.

Sohi R, Bansal V, Veeresha KL, Gambhir R (2010)[12] assessed the oral health status and treatment needs of police personnel in three districts in Haryana. The study was conducted among 652 police personnel at 22 police stations, 2 S.P. offices and a 'police line'. The results showed that hypertension was the most common (9.97%) self reported systemic condition. 54.14% subjects report to be in need of some dental treatment and more than half of them blamed 'lack of time' as the major reason for not getting the treatment done. The prevalence of dental caries was 54.3% and the mean DMFT was 3.05. Mean number of teeth requiring filling and extraction were 0.44 and 0.67. 31.29% of them needed maxillary prosthesis while 40.03% needed mandibular prosthesis ($P<0.05$). 23.6% had a healthy periodontium while 61.3% had a CPI score of 2. Their nature of job is such that they are subjected to physical, mental and emotional stress.

Hamissi J, Kakei S, Hamissi H (2010)[13] studied the relationship between psychological stress and periodontal disease on 496 patients aged 17–64 years at the Department of Periodontics, Qazvin university of Medical sciences Iran. The results showed that the Clinical Attachment Loss (CAL) was normal in 8.9% male and 10.6% female, slight in 23.9% male and 32.5% female, moderate in 40.9% male and 43.8% female, severe in 27.3% male and 13.8% female. The psychosocial factors, anxiety, depression and chronic stress had significant relationship with CAL. The patients having severe CAL were found suffering from severe anxiety and they used more emotional focused coping methods (P=0.0002) and those with lower CAL used problem focussed coping methods (P=0.001). It was concluded that the continuous financial strains, depression, inadequate coping ability and maladaptive trait dispositions were significant risk factors for periodontal attachment loss.

Nwhater S.O, Ayanbadejo P, Savage KW, Jeboda SD (2010)[14] assessed the oral hygiene status and periodontal treatment needs of 254 adult factory workers aged 19 to 74 years consisting of 184 males and 70 females. 123 (66.8%) of the males examined were non smokers, while 61 (33.2%) were smokers. All females were non smokers, hence excluded from the study. The results showed that 29 non smokers (23.6%) and 18 smokers (29.5%) had experienced gingival bleeding while cleaning. Smokers had lower numbers of healthy sextants that non smokers in all age groups (X^2=47.73, df= 3, p=0.000000).For code 2, smokers had 174 sextants while non smokers had 240 sextants with code 2 (X^2=84.94, df=3, p<0.001) Smokers had 16 teeth with periodontal pockets (2.7%) while non smokers had 11 teeth with periodontal pockets (0.9%).Smokers had less gingival

bleeding (1.13%) than non smokers (1.90%). The mean OHI-S was found to be 1.275 for smokers and 0.803 for non smokers. Thus it was concluded that smokers had poorer oral hygiene, less healthy periodontium, more calculus and more periodontal pocketing than non smokers.

Martín JM, Pérez MB , Martínez AA (2009)[15] conducted a study to validate the Oral Health Impact Profile-14 for use among 270 Regional Government staff visiting the Employment Risk Prevention Centre for a routine medical check-up in Spain. The results showed that the reliability coefficient (Cronbach´s alpha) of the OHIP-14 was above the recommended 0.7 threshold and considered excellent (alpha:0.89). Some subjective factors (perceived dental treatment need, complaints about mouth and self-rated oral satisfaction) were strongly associated with both total scoring methods of the OHIP-14, supporting the criterion, construct and convergent validity. Moreover the impact levels were mainly influenced by caries data, e.g., number of teeth requiring extraction ($r = 0.21$; $p<0.01$) and number of decayed visible teeth (between premolars) ($r = 0.17$; $p<0.01$). The prevalence of impacts was 80.7% using the occasional or more frequently threshold. The most prevalently affected OHIP domains were "psychological discomfort" (53.7%), "functional limitation" (51.1%) and "physical pain" (42.2%). It was concluded that the OHIP-14 was a precise, valid and reliable instrument for assessing oral health-related quality of life among adult population in Spain.

Daly B et al (2010)[16] conducted a study among homeless people in UK reported that the mean OHIP score was found to be 32.0. There was a slight relationship between the perceived impact OHIP 14 and the clinical condition

(number of sound teeth, DT, FT and root lesions), although only the correlation for missing teeth was significant (p=0.05). People with natural teeth and dentures reported significantly more impacts compared with people with natural teeth only (p<0.05)

Ingle NA, Chaly PE, Zohara CK (2010)[17] conducted a study to describe oral health related quality of life in 307 adult population attending the outpatient department of Meenakshi Ammal Dental College and Hospital, Chennai and also assessed the relationship between clinical measures of oral health status and oral health related quality of life. The results showed that the mean total OHIP -14 score was 15.5(SD 9.6).The mean decayed, missing and filled teeth (DMFT) index score was 5.2 (SD 2.9) and the mean oral hygiene index- simplified (OHI-S) was 2.55 (SD 1.3). Caries status and the number of missing teeth were found to be significantly correlated with most of the sub domains of the OHIP-14. It was concluded that the OHIP-14 scores were significantly associated with clinical oral health status indicators and have an important effect on oral health related quality of life.

Kudo Y et al (2011)[18] conducted a study among military population in Japan and reported that the mean OHIP 14 scores was 4.6. The magnitude of the correlation between the number of missing teeth with OHIP scores was small (r=0.22; p<0.001). Mean OHIP scores differed between subjects with and without dentures (8.6 and 4.4; p < 0.001).

MATERIALS AND METHODS

Background of the Study

The present descriptive cross-sectional study was conducted to assess the oral health status and treatment needs of professional bus drivers who were working in the Government Institution and those working in private bus agencies in Chennai. Metropolitan Transport Corporation (MTC) is the only public transport bus service operating in Chennai under the auspices of the Government of Tamilnadu. Hence drivers who were working in the Metropolitan Transport Corporation (Government) and also the drivers of private establishments were selected for this study. The study was conducted during October 2010 to March 2011.

Ethical Clearance:

Ethical clearance to conduct the study was obtained from the Institution Review Board of Ragas Dental College and Hospital. Further, permission was also obtained from the Managing Director, Metropolitan Transport Corporation, and also from the Branch Managers of the concerned bus depots where the study was carried out **(ANNEXURE I).** Permission was also obtained from the proprietors of the concerned private travel agencies where the study was carried out. Informed consent was collected from individual subjects after explaining the study protocol **(ANNEXURE II).**

Background of the study area

Chennai (formerly known as Madras) is the capital of the state of Tamil Nadu and is India's 4th and world's 36th largest metropolitan city. It is located on the Coromandel Coast of the Bay of Bengal. Popularly known as "Gateway to South India", Chennai is well connected internationally and to other parts of India. It is a large commercial and industrial centre, and is known for its cultural heritage. Chennai has an estimated population of around 7.5 million (2011 census) and an estimated area of around 181.06 km.

There are a total number of 26 bus depots operating under the Metropolitan Transport Corporation, Chennai as per the records of Ministry of Transport, Government of Tamilnadu. About 10,000 drivers are employed in MTC. Other than the State run buses, there are various private bus fleet services that operate to other cities. There are about 80 private travel agencies operating in Koyambedu, Chennai. About 2,000 drivers are employed in these agencies The private bus drivers travel long distance particularly during night time from Chennai to reach other cities.

Study population

The professional bus drivers in Chennai who were above 18 years old were selected as the study population. They were classified into two groups as Government bus drivers (MTC drivers) and Private bus drivers.

Inclusion and Exclusion Criteria

The inclusion and exclusion criteria of the study population are as follows.

Inclusion Criteria:

1. The subjects who were above the age of 18 years and present on the day of study.
2. The subjects who had completed a minimum of one year of working experience.

Exclusion Criteria:

1. People who were not willing to participate in the study were excluded.
2. People who had history of any systemic illness like diabetes mellitus, hypertension etc. which might affect the outcome of the study were also excluded.

Pilot Study

No existing data regarding the oral health status among the study group in Chennai was available. Hence, a pilot study was carried out during August 2010 among 40 bus drivers at Annanagar West Bus Depot, MTC, Chennai and also among 20 bus drivers at two private travel agencies, Koyambedu, Chennai using the WHO Oral Health Assessment Form 1997, a pre tested questionnaire and oral health impact profile 14 questionnaire. The feasibility of the study was assessed during the pilot study. It took an average of 15-20 minutes to complete the proforma and questionnaire. Some questions were modified after the pilot study.

The prevalence of oral mucosal lesion (leukoplakia), was considered for the sample size calculation, as it constitutes the major oral disease affecting this population. It was found to be 31.7 %.

Examiner Calibration

Since a single examiner carried out the examination, intra-examiner calibration was performed. 20 subjects were examined using the study proforma. The same subjects were reexamined on a later date. 90% reproducibility was found in all the subjects.

Sample size determination:

Sample size calculation was done using the formula given below.

$$n = \frac{z^2 pq}{d^2} = \frac{2^2 \times 31.7 \times 68.3}{3.17 \times 3.17} = \frac{4 \times 2165.11}{10.0489} = \frac{8660.44}{10.0489} = 861.82$$

Z (Confidence Intervel 95%) = 2

p (Prevalence in pilot study) =31.7 %

q (100 – Prevalence) =68.3

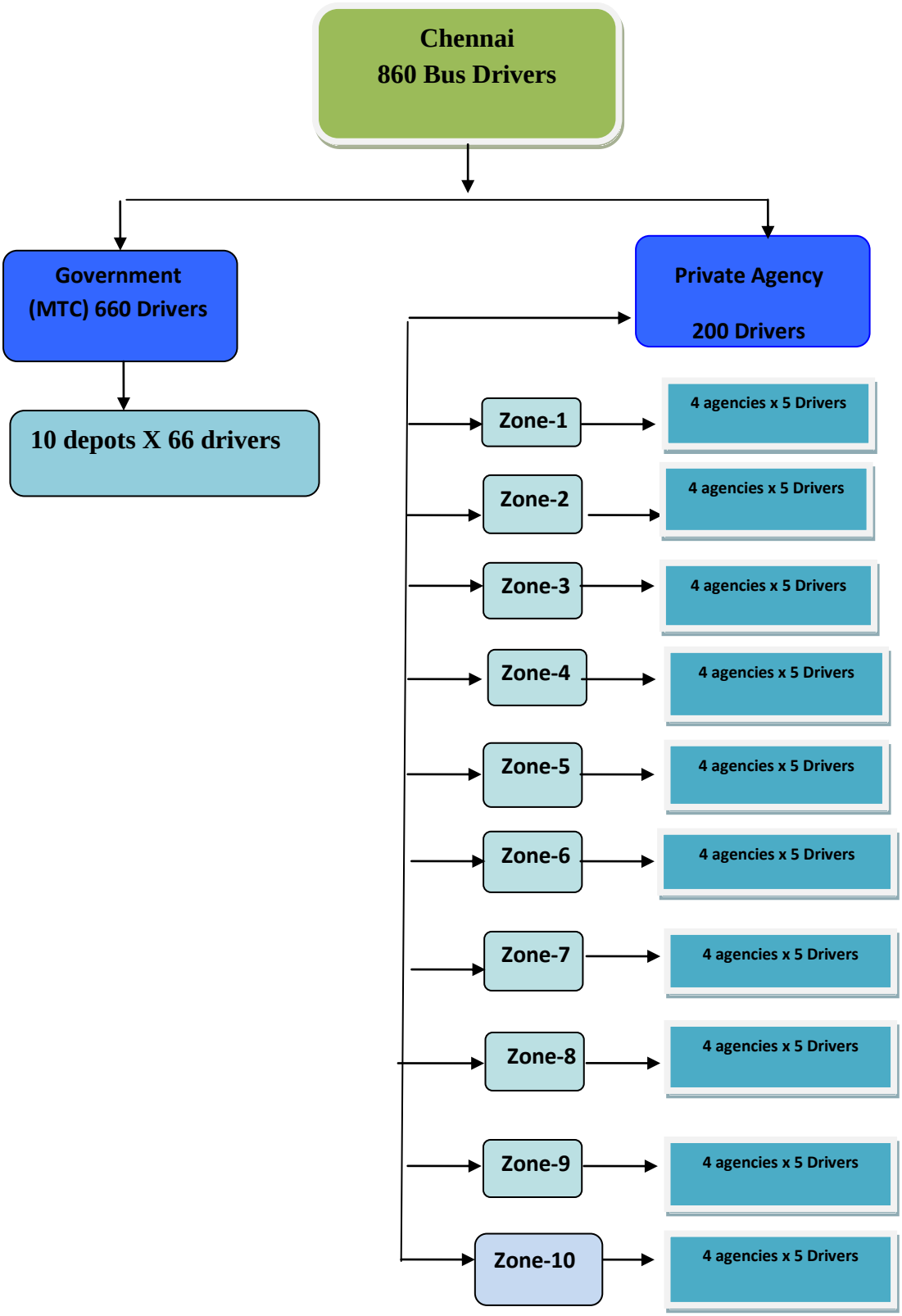
d (allowable error 10 % of p) = 3.17

The sample size was rounded off to 860.

As there are about 10,000 bus drivers working in MTC and 2000 bus drivers in private establishments, the ratio of Government and private drivers was found to be 5 : 1. Hence out of the total sample size of 860, Government drivers 660 and private drivers 200 were taken for this study.

Study sample and sampling procedure :

A simple random sampling method (lottery method) was followed in the study in two stages. In the first stage, 10 bus depots were selected randomly from the 26 bus depots operating under the Metropolitan Transport Corporation Chennai. In the second stage, 66 drivers from each of the ten bus depots were selected randomly, which made a total of 660 Government drivers**.** Similarly, 4 travel agencies were randomly selected from each of the 10 zones. 5 drivers from each of the travel agencies were selected randomly, which made a total of 200 private drivers **(ANNEXURE III).**Thus the total sample consisted of 860 bus drivers**.** The above sampling procedure is depicted in the flow chart below:


Chennai
860 Bus Drivers
Government
(MTC) 660 Drivers
10 depots X 66 drivers
Private Agency
200 Drivers
Zone-1
4 agencies x 5 Drivers
Zone-2
4 agencies x 5 Drivers
Zone-3
4 agencies x 5 Drivers
Zone-4
4 agencies x 5 Drivers
Zone-5
4 agencies x 5 Drivers
Zone-6
4 agencies x 5 Drivers
Zone-7
4 agencies x 5 Drivers
Zone-8
4 agencies x 5 Drivers
Zone-9
4 agencies x 5 Drivers
Zone-10
4 agencies x 5 Drivers

Data Collection:

Data collection was carried out using a study proforma, which consisted of three parts. The first part consisted the demographic information continued by a pre-tested, questionnaire regarding tobacco habits, questions to assess utilization of dental care services and oral hygiene practices etc **(ANNEXURE IV).** The second part consisted of the oral health impact profile – 14 (Slade 1997) to assess their oral health related quality of life **(ANNEXURE V).** The third part consisted of WHO Oral Health Assessment Form 1997 **(ANNEXURE VI).** The boxes 166 to 176 of the assessment form dealing with dentofacial anomalies were also excluded as the study subjects were above 20 years.

Examination Procedure

The field examinations were carried out by a single examiner and recordings were done with the help of an assistant**.** After a brief description about the purpose of the study, the investigator personally administered the pretested questionnaire consisting of the tobacco habits, utilization of dental care services and oral hygiene practices etc and also the oral health impact profile – 14 questionnaire to assess their oral health related quality of life to study participants and provided appropriate guidelines to answer them.

Assessment of oral health status was done using WHO Oral Health Assessment Form 1997 as described by World Health Organization, Basic Oral Health Survey Methods (1997) using a Community Periodontal Index (CPI) probe and plane mouth mirror. Type-III clinical examination as recommended by American Dental Association (ADA) was followed. The clinical examination was

carried out under good illumination in the bus depot premises. All the subjects present on the day of examination were examined. The subjects were made to sit on a chair in upright position with proper head rest. The investigator examined the subjects by standing on the right side of the patient during examination. The recording assistant was positioned seated on the left side of the patient close to the examiner, so that he was able to hear the examiners instructions and codes and also the examiner was able to see the data being recorded. A table was also placed so that the instruments were within the easy reach of the examiner **(PHOTOGRAPH 1).**

Armamentarium:

The required sets of following instruments were used for the study **(PHOTOGRAPH 2)**

Mouth mirrors

CPI Probe

Tweezers

Sterilized cotton rolls

Cotton holder

Stainless Kidney trays

Disposable Gloves

Disposable Mouth mask

Sterilizing solution

Recording Proforma

Autoclaved instruments were used and adequate number of each instrument was carried. During data collection, chemical method of disinfection and sterilization using Korsolex (Glutaraldehyde- 7gms; Polymethyl urea derivatives- 11.6 gms; 1,6 dihydroxy 2,5 droxyhexane - 8.2gm) diluted by adding 1:9 water was used. Used instruments were washed and placed in the disinfectant solution (for 30 minutes), then re-washed and drained well. After each day of examination, the entire set of instruments was autoclaved.

Examination, oral health education and treatment referral:

Each driver was examined for 10 minutes after the questionnaire was completed. Around 66 drivers (approximately) were examined per day. After the oral examination, a brief oral health education session was conducted in the local language (Tamil) to all the workers using audiovisual aids.

The findings of the survey were reported then and there to the drivers and those requiring treatment were provided free treatment by arranging Dental Camps in all the 10 bus depots, organized by Ragas Dental College and Hospital in co-operation with the Metropolitan Transport Corporation, Chennai **(PHOTOGRAPH 3).** The private drivers were also referred for treatment to the Institution with concession forms**.**

Statistical Analysis

The collected data was entered to the computer using Microsoft Windows Excel 2003. Qualitative data were presented as frequency and percentages and quantitative data as mean and standard deviation. Inferential statistics were derived regarding the oral health status among the two types of bus drivers using Chi-square test in case of qualitative data and Mann Whitney U test in case of quantitative data. Kendall's tau_b correlation was used to find the correlation between OHIP and DMFT , and also between sweet score and DMFT. Kruskal-wallis test was used to determine the association between OHIP and CPI, OHIP and LOA, OHIP and prosthetic status. 95% confidence limit was set for the above analysis. SPSS version 15 was used for analysis. For all the tests the level of significance was set at $p < 0.05$.

PHOTOGRAPH 1: EXAMINATION OF A PATIENT

PHOTOGRAPH 2: ARMAMENTARIUM

PHOTOGRAPH 3: DENTAL CAMPS

A bus driver getting treatment in the dental camp

Dr. Karunanidhi MBBS., (The Medical Officer of Metropolitan Transport Corporation , Adyar branch) visited the dental camp

The bus drivers waiting for dental treatment

Mr. Babu B.E (The Managing Director of Metropolitan Transport Corporation) and Dr. Rajakumari MBBS.,DGO (The Chief Medical Officer of Metropolitan Transport Corporation, Chennai) visited our dental camp.

RESULTS

The present study was done to assess the oral health status and treatment needs of professional bus drivers in Chennai.. The study population comprised of 860 bus drivers among whom 660 were from Government Institution (MTC) and 200 were from private establishments. The study population were obtained from 10 bus depots of MTC and 40 private travel agencies.

Table 1 and Graph 1 shows the mean ages of the study population. The mean ages of Government drivers and private drivers were 40.76+ 8.588 and 39.74+ 8.716 respectively. The overall mean for the Government and private drivers was 40.25+ 8.652 . There was no statistical difference between the Government and private drivers based on age. (F = 0.052; p = 0.820)

Table 1: Distribution of study population based on mean age

	Government Drivers **n = 660**	**Private Drivers** **n = 200**
Mean	40.76	39.74
Standard deviation	8.588	8.716

F value= 0.052 p = 0.820 (non significant)

Graph 1: Distribution of study population based on mean age

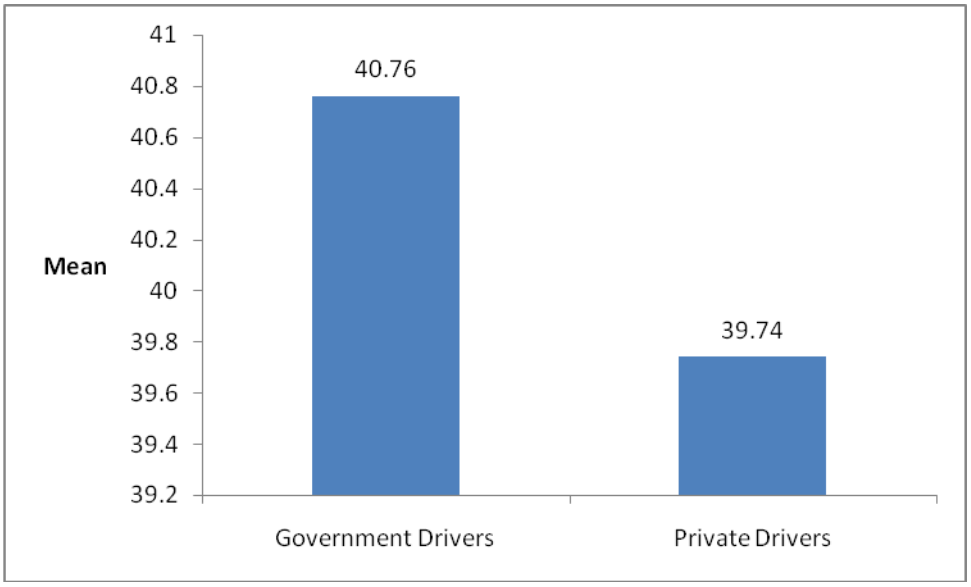


Table 2 and Graph 2 shows the distribution of study population based on their education. The majority of the population, i.e.,454(52.8%) drivers of the total population studied secondary education, among which majority of them i.e 357 of them were Government drivers and 97 of them were private drivers. In the primary education category, there were 17(2.0%) drivers of which all the 17 of them were private drivers. In the P.U.C category, majority, 147 drivers were in Government Institution and 48 drivers were in private establishments. Among 194(22.6%) drivers in the degree category, majority of them, 156 drivers were in Government Institution and 38 drivers were in private establishments. None of the drivers were illiterate. Statistical tests showed a significant difference between the Government and private drivers based on education.($\chi^2 = 58.673$; p=0.000)

Table2: Distribution of study population based on their education

Education	Government Drivers	Private Drivers	Total
No formal education	0 (0%)	0 (0%)	0 (0%)
Primary education	0 (0%)	17 (8.5%)	17 (2.0%)
Secondary education	357 (54.1%)	97 (48.5%)	454 (52.8%)
P.U.C.	147 (22.3%)	48 (24.0%)	195 (22.7%)
Degree	156 (23.6%)	38 (19.0%)	194 (22.6%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 58.673 p= 0.000 (significant)

Graph 2: Distribution of study population based on their education

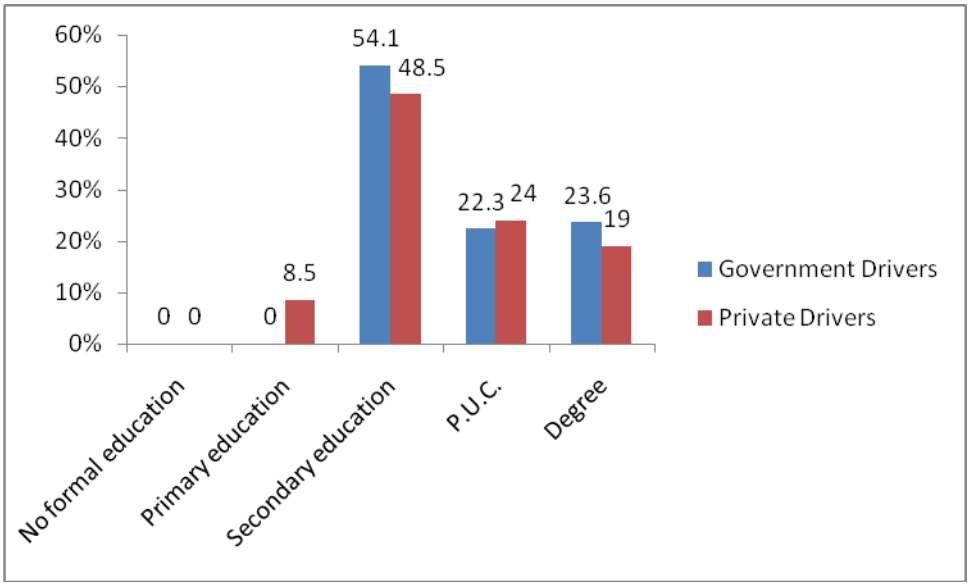


Table 3 and Graph 3 shows the mean working hours per day of the study population. The mean working hours per day of Government drivers and private drivers were 8.00+ 0.087 and 8.85+ 2.396 respectively. The overall mean and S.D for the Government and private drivers was 8.425+ 1.242 . Statistical tests showed a significant difference between the Government and private drivers based on working hours per day.(F =562.766 ; p=0.000)

Table 3: Distribution of study population based on mean working hours per day

	Government Drivers n = 660	**Private Drivers n = 200**
Mean	8.00	8.85
Standard deviation	0.087	2.396

F value = 562.766 p = 0.000 (significant)

Graph 3 : Distribution of study population based on mean working hours per day

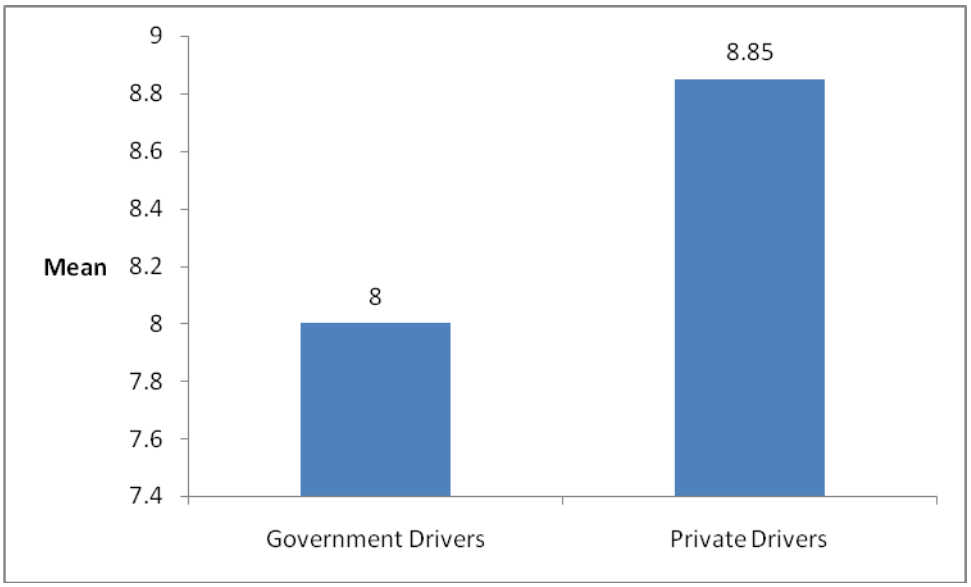


Table 4 and Graph 4 shows the mean monthly income of the study population. The mean monthly income of Government drivers and private drivers were 11515.04+ 5479.427 and 10130.53+ 3749.081 respectively. The overall mean and S.D for the Government and private drivers was 10822.785+ 4614.254 . Statistical tests showed a significant difference between the Government and private drivers based on monthly income.(Mann whitney U = 57554.500; p = 0.007)

Table 4: Distribution of study population based on mean monthly income

	Government Drivers n = 660	**Private Drivers n = 200**
Mean	11515.04	10130.53
Standard deviation	5479.427	3749.081

Mann whitney U = 57554.500 p = 0.007 (significant)

Graph 4: Distribution of study population based on mean monthly income

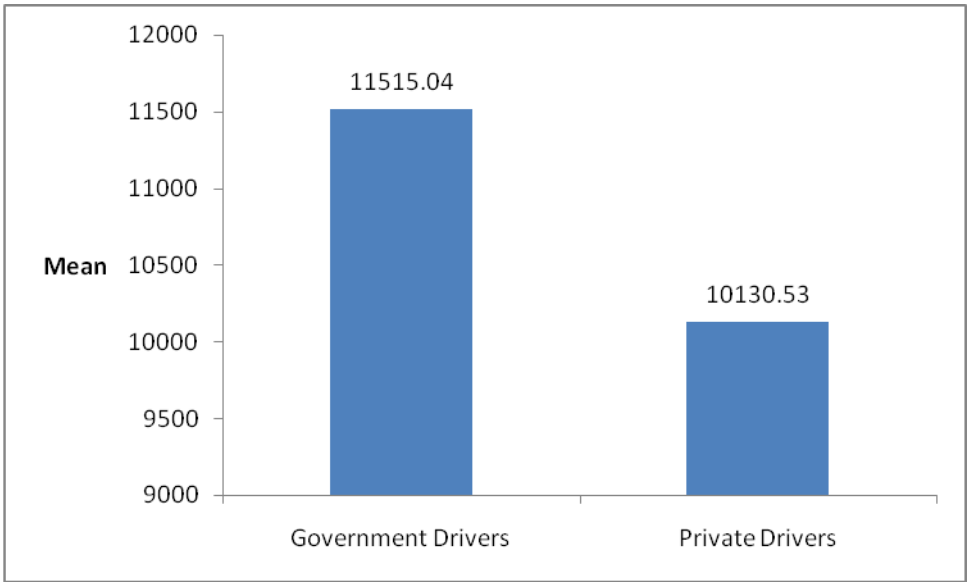


Table 5 and Graph 5 shows the mean working experience of the study population. The mean working experience of Government drivers and private drivers were 11.97+ 9.618 and 11.40+ 9.033 respectively. The overall mean and S.D for the Government and Private drivers was 11.685+ 9.33 . There was no statistical difference between the Government and Private drivers based on working experience .(Mann whitney U = 65183.000; p = 0.790)

Table 5: Distribution of study population based on mean working experience

	Government Drivers n = 660	**Private Drivers n = 200**
Mean	11.97	11.40
Standard deviation	9.618	9.033

Mann whitney U = 65183.000 p = 0.790 (non significant)

Graph 5: Distribution of study population based on mean working experience

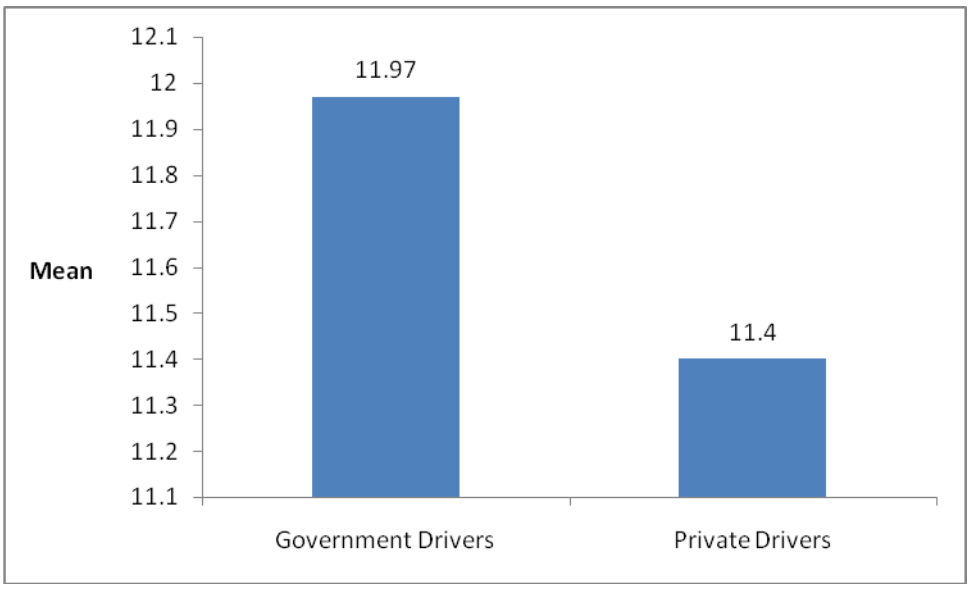


Table 6 and Graph 6 shows the distribution of study population based on type of diet. Among 860 workers, majority of them, 805(93.6%) drivers consumed mixed diet and 55(6.4%) drivers consumed vegetarian diet. There was no statistical difference between the Government and Private drivers based on type of diet. (Chi square value = 0.531 p = 0.466)

Table 6: Distribution of study population based on type of diet

Diet	Government Drivers	Private Drivers	Total
Vegetarian	40 (6.1%)	15 (7.5%)	55 (6.4%)
Mixed	620 (93.9%)	185 (92.5%)	805 (93.6%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 0.531 p = 0.466 (non significant)

Graph 6: Distribution of study population based on type of diet

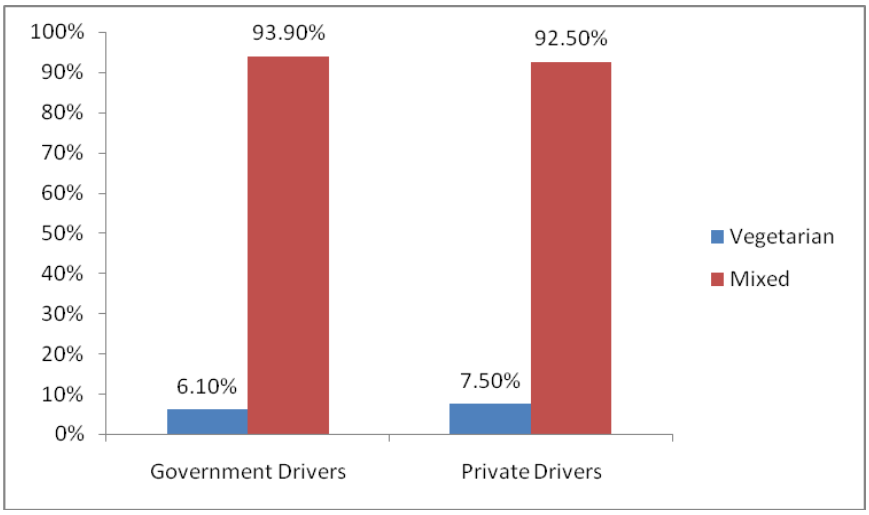


Table 7 and Graph 7 shows the distribution of study population based on sweet score. Among 860 drivers, majority of them, 739(85.9%) drivers were in 'watch out zone', 61 (7.1%) had a score of 'good' 60 (7.0%) had 'excellent' score. There was no statistical difference between the Government and Private drivers based on sweet score. (Chi square value = 0.633; p = 0.380)

Table 7 :Distribution of study population based on sweet score

Sweet score	Government Drivers	Private Drivers	Total
Excellent	44 (6.7%)	16 (8.0%)	60 (7.0%)
Good	48 (7.3%)	13 (6.5%)	61 (7.1%)
Watch out zone	568 (86.1%)	171 (85.5%)	739 (85.9%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 0.633; p = 0.380 (non significant)

Graph 7 :Distribution of study population based on sweet score

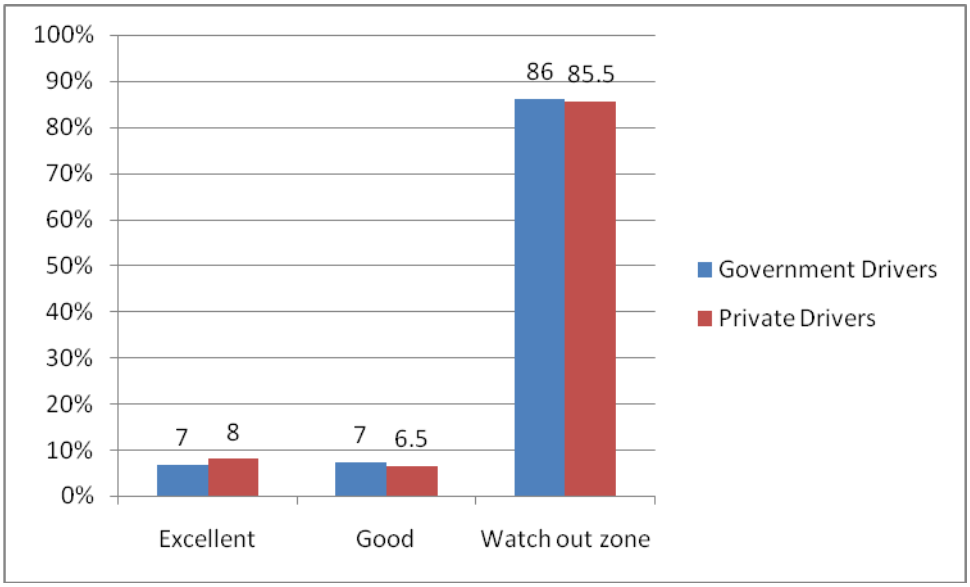


Table 8(a) and Graph 8(a) shows the distribution of study population based upon the type of tobacco used. 163(19%) drivers had the habit of smoking

cigarette, 11(1.3%) drivers had the habit of smoking beedi, 57 (6.6%) drivers had the habit of paan chewing, 22 (2.6%) drivers had the habit of hans chewing, 25 (2.9%) drivers had the habit of gutkha chewing, 8 (0.9%) had the habit of mawa chewing and 102 (11.9%) drivers had the habit of using both smoking and smokeless forms. 472 (54.9%) drivers did not use any form of tobacco. Statistical test showed no significant difference between Government and Private drivers based on type of tobacco used.(χ^2 = 9.184; p=0.240)

Table 8(a) :Distribution of study population based upon the type of tobacco used

Smoking/smokeless tobacco habit	Government Drivers	Private Drivers	Total
No tobacco habit	357 (54.1%)	115 (57.5%)	472 (54.9%)
Cigarette	128 (19.4%)	35 (17.5%)	163 (19.0%)
Beedi	8 (1.2%)	3 (1.5%)	11 (1.3%)
Paan	39 (5.9%)	18 (9.0%)	57 (6.6%)
Hans	20 (3.0%)	2 (1.0%)	22 (2.6%)
Gutkha	23 (3.5%)	2 (1.0%)	25 (2.9%)
Mawa	7 (1.1%)	1 (0.5%)	8 (0.9%)
Smoking and smokeless form	78 (11.8%)	24 (12.0%)	102 (11.9%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 9.184; p = 0.240 (non significant)

Graph 8(a): Distribution of study population based upon the type of tobacco used

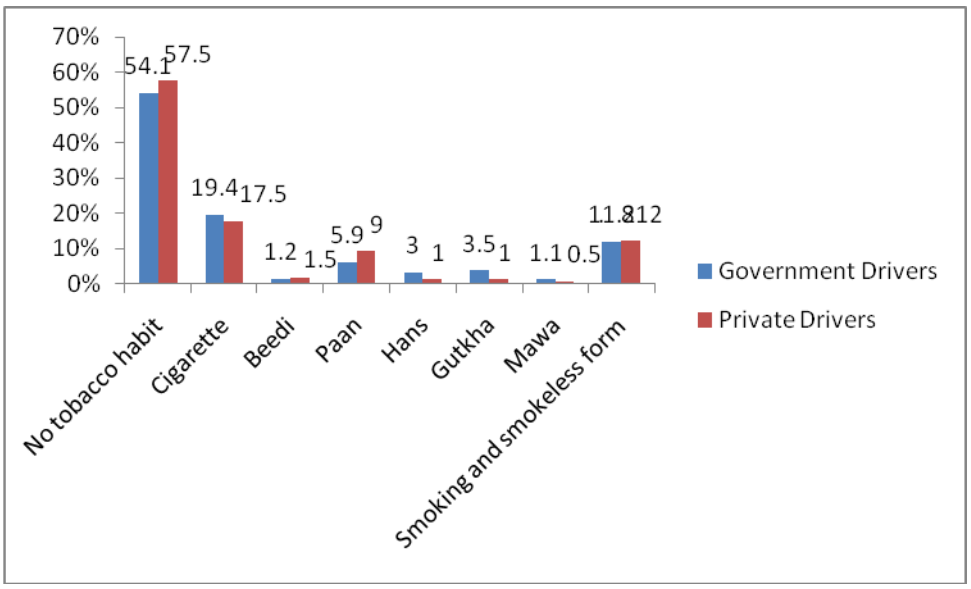


Table 8 (b) and Graph 8 (b) shows the distribution of study population based on alcohol consumption. Among 860 workers, majority of them,i.e,472(54.9%) drivers did not consume alcohol and 388(45.1%)drivers consumed alcohol. There was no statistical difference between Government and Private drivers based on alcohol consumption. (Chi square value = 0.001; p = 0.970)

Table 8 (b): Distribution of study population based on whether they consume alcohol

Alcohol consumption	Government Drivers	Private Drivers	Total
No	362 (54.8%)	110 (55.0%)	472 (54.9%)
Yes	298 (45.2%)	90 (45.0%)	388 (45.1%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 0.001; p = 0.970 (non significant)

Graph 8 (b): Distribution of study population based on whether they consume alcohol

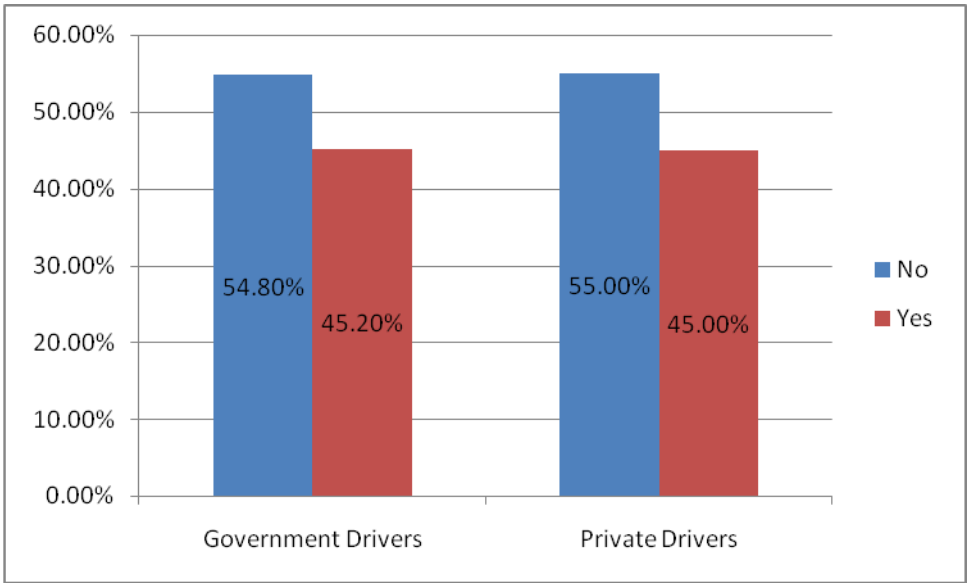


Table 9(a) and Graph 9(a) shows the distribution of study population based on the materials used for brushing their teeth. Among 860 drivers, majority of them 836(97.2%) used tooth brush and tooth paste, 13(1.5%) drivers used tooth brush and tooth powder, 2(0.2%) drivers used finger and tooth paste, 5(0.6%) drivers used finger and tooth powder,1(0.1%) driver used finger alone, 3(0.3%) drivers used others. There was no statistical difference between Government and Private drivers based on tooth cleaning.(Chi square value = 2.612; p = 0.760)

Table 9(a) :Distribution of study population based on materials used for brushing their teeth

Type of tooth cleaning	Government Drivers	Private Drivers	Total
Tooth brush+paste	640 (97.0%)	196 (98.0%)	836 (97.2%)
Tooth brush+powder	10 (1.5%)	3 (1.5%)	13 (1.5%)
Finger+paste	2 (0.3%)	0 (0%)	2 (0.2%)
Finger+powder	5 (0.8%)	0 (0%)	5 (0.6%)
Finger	1 (0.2%)	0 (0%)	1 (0.1%)
Others	2 (0.3%)	1 (0.5%)	3 (0.3%)
Total	660 (100%)	200 (100%)	860 (100%)

Chisquare value = 2.612; p = 0.760 (non significant)

Graph 9(a) :Distribution of study population based on materials used for brushing their teeth

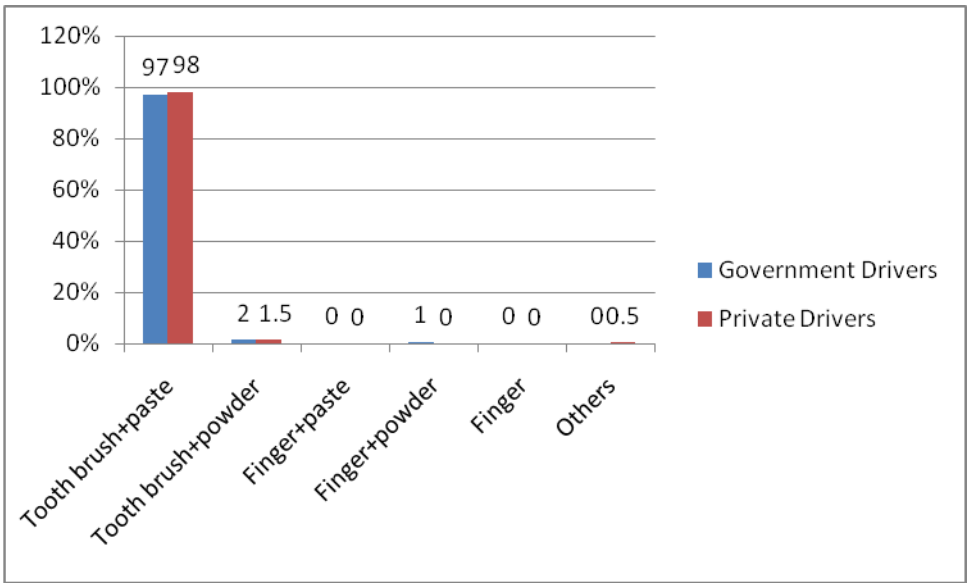


Table 9(b) and Graph 9(b) shows the distribution of study population based on method of brushing. Among 860 workers, majority of them 442(51.4%) drivers brushed horizontally,66(7.7%) drivers brushed vertically,328(38.1%) brushed in a circular motion,24(2.8%) din't know the method which they used for brushing. There was no statistical difference between Government and Private drivers based on method of brushing (Chi square value = 3.769; p = 0.288)

Table 9(b): Distribution of study population based on method of tooth brushing

Method of brushing	Government Drivers	Private Drivers	Total
Horizontal	342 (51.8%)	100 (50.0%)	442 (51.4%)
Vertical	56 (8.5%)	10 (5.0%)	66 (7.7%)
Circular	245 (37.1%)	83 (41.5%)	328 (38.1%)
Don't know	17 (2.6%)	7 (3.5%)	24 (2.8%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 3.769; p = 0.288 (non significant)

Graph 9(b): Distribution of study population based on method of tooth brushing

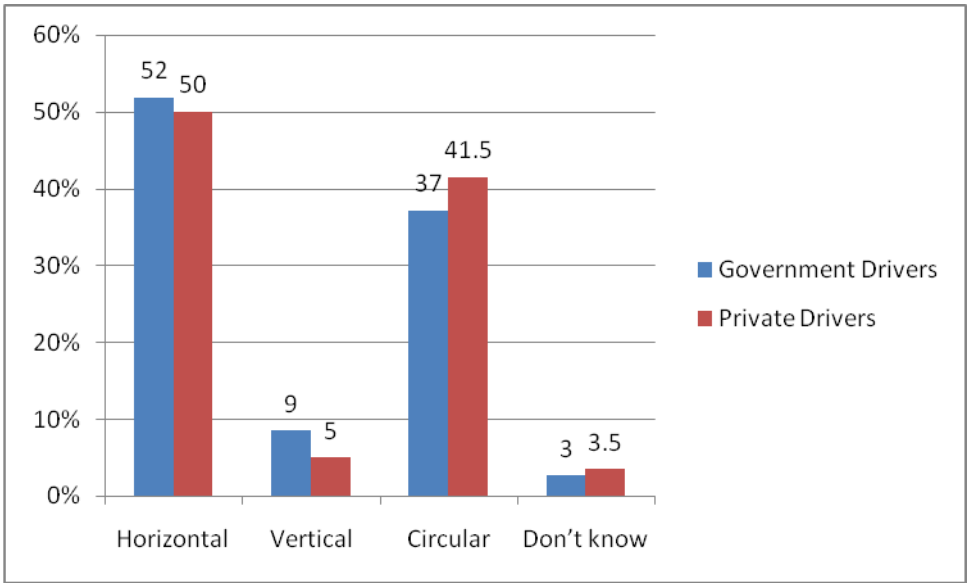


Table 9(c) and Graph 9(c) shows the distribution of study population based on frequency of brushing. Among 860 workers, majority of them i.e

680(79.1%) drivers brushed once daily,178(20.7%)drivers brushed twice daily and 2(0.2%) drivers brushed thrice or more. There was no statistical difference between Government and Private drivers based on frequency of brushing. (Chi square value = 1.812; p = 0.404)

Table 9(c) :Distribution of study population based on the number of times they clean their teeth per day

Frequency of brushing	Government Drivers	Private Drivers	Total
Once daily	527 (79.8%)	153 (76.5%)	680 (79.1%)
Twice daily	131 (19.8%)	47 (23.5%)	178 (20.7%)
Thrice or more	2 (0.3%)	0 (0%)	2 (0.2%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 1.812; p = 0.404 (non significant)

Graph 9(c) :Distribution of study population based on the number of times they clean their teeth per day

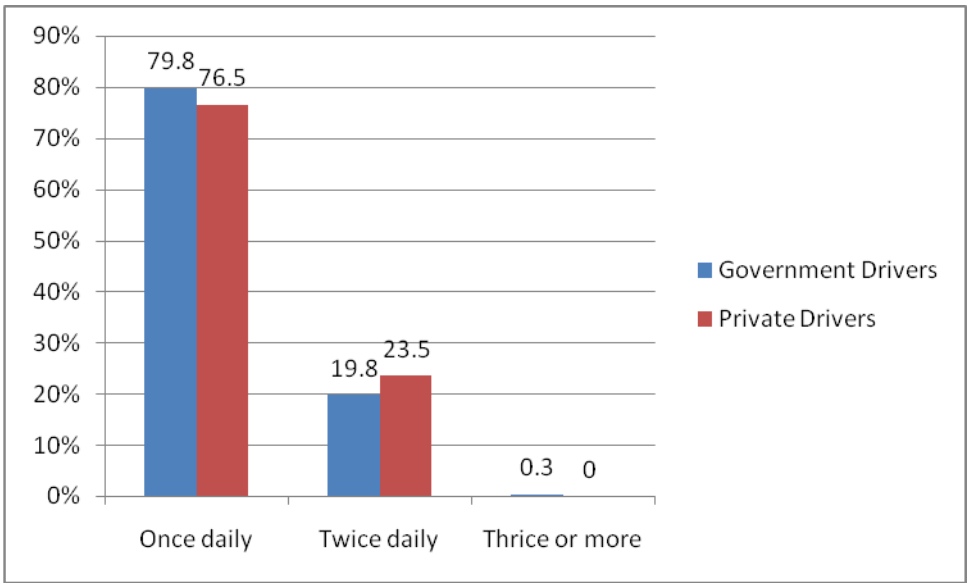


Table 9(d) and Graph 9(d) shows the distribution of study population based on duration of tooth brushing. Among 860 drivers, majority of them i.e, 470(54.7%) drivers brushed for 3-5 minutes,142(16.5%)drivers brushed for 1-2 minutes, 238(27.7%) drivers brushed for >5 minutes and 10(1.2%) drivers did not notice their duration of tooth brushing. There was no statistical difference between Government and Private drivers based on frequency of brushing. (Chi square value = 5.459; p = 0.141)

Table 9(d): Distribution of study population based on duration of tooth brushing

Duration of brushing	Government Drivers	Private Drivers	Total
1-2 min	114 (17.3%)	28 (14.0%)	142 (16.5%)
3-5 min	368 (55.8%)	102 (51.0%)	470 (54.7%)
>5 min	170 (25.8%)	68 (34.0%)	238 (27.7%)
Not noticed	8 (1.2%)	2 (1.0%)	10 (1.2%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 5.459; p = 0.141 (non significant)

Graph 9(d) :Distribution of study population based on duration of tooth brushing

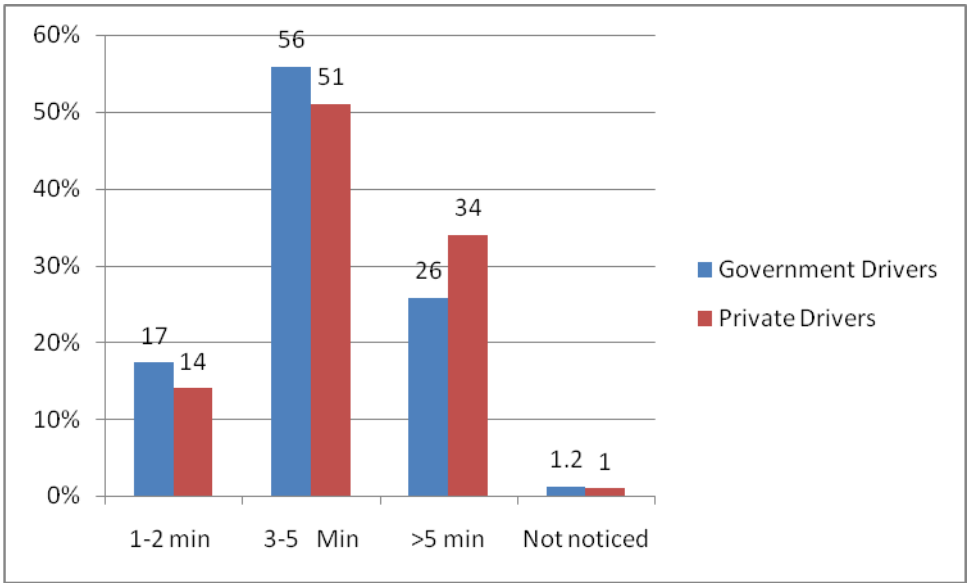


Table 9(e) and Graph 9(e) shows the distribution of study population based on frequency of changing the tooth brush. Among 860 drivers, majority of

them i.e, 309(35.9%) drivers changed their tooth brush once in 3 months, 287(33.3%) changed their tooth brush every 1-2 months, 161(18.7%) drivers changed their tooth brush every 4-6 months, 9(1%) drivers changed their tooth brush every 7-12 months, 68(7.9%) drivers changed their tooth brush once they get flared, 16(1.9%) drivers changed their tooth brush irregularly, and 10(1.2%) drivers did not notice the frequency of changing their tooth brush. There was no statistical difference between Government and Private drivers based on frequency of changing the tooth brush. (Chi square value = 8.387; p = 0.300)

Table 9(e): Distribution of study population based on Frequency of changing the tooth brush

Frequency of changing the tooth brush	Government Drivers	Private Drivers	Total
1-2 months	205 (31.1%)	82 (41.0%)	287 (33.3%)
3 months	246 (37.3%)	63 (31.5%)	309 (35.9%)
4-6 months	126 (19.1%)	35 (17.5%)	161 (18.7%)
7-12 months	7 (1.1%)	2 (1.0%)	9 (1.0%)
Once flared	56 (8.5%)	12 (6.0%)	68 (7.9%)
Irregular	12 (1.8%)	4 (2.0%)	16 (1.9%)
Not noticed	8 (1.2%)	2 (1.0%)	10 (1.2%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 8.387; p = 0.300 (non significant)

Graph 9(e): **Distribution of study population based on frequency of changing the tooth brush**

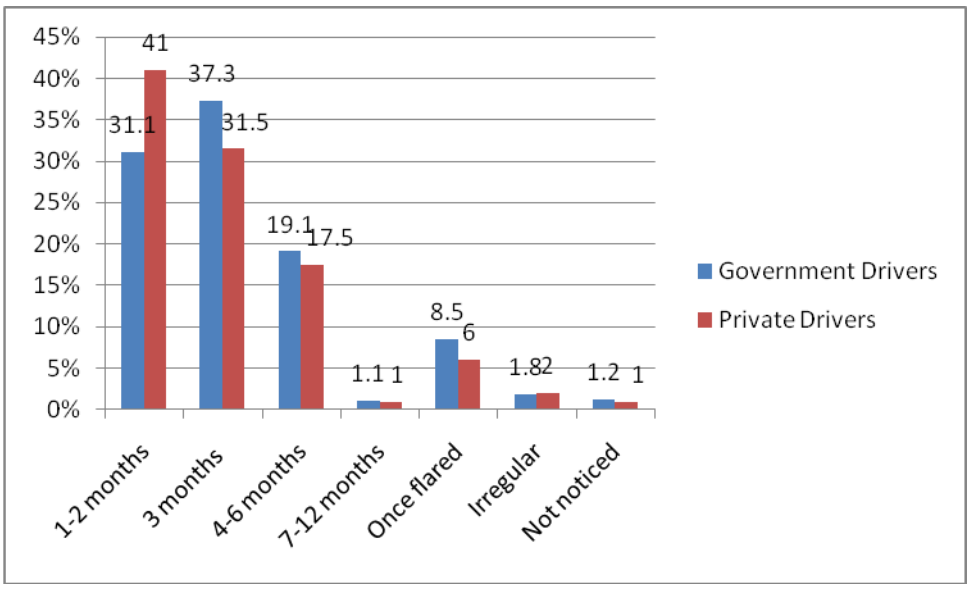


Table 10(a) and Graph 10(a) shows the distribution of study population based on the reason for their last dental visit. Among 860 drivers, majority of the workers, 317(36.9%) drivers had never visited dentist, 18(2.1%) drivers had visited dentist due to tooth ache,113(13.1%) drivers had visited for filling their teeth, 251(29.2%) had visited for extraction , 77(9%) drivers visited dentist for cleaning their teeth and 39(4.5%) drivers had visited dentist for dentures. Statistical tests showed a significant difference between Government and private drivers based on reason for last dental visit.(Chi-square value= 15.589; p=0.016)

Table 10(a): Distribution of study population based on the reason for last dental visit

Reason for last visit	Government Drivers	Private Drivers	Total
No visit	245 (37.1%)	72 (36.0%)	317 (36.9%)
Tooth ache	15 (2.3%)	3 (1.5%)	18 (2.1%)
Extraction	191 (28.9%)	60 (30.0%)	251 (29.2%)
Filling	90 (13.6%)	23 (11.5%)	113 (13.1%)
Get teeth cleaned	60 (9.1%)	17 (8.5%)	77 (9.0%)
Replacement of teeth	27 (4.1%)	12 (6.0%)	39 (4.5%)
Others	32 (4.8%)	13 (6.5%)	45 (5.2%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square = 15.589; p = 0.016 (significant)

Graph 10(a) :Distribution of study population based on the reason for last dental visit

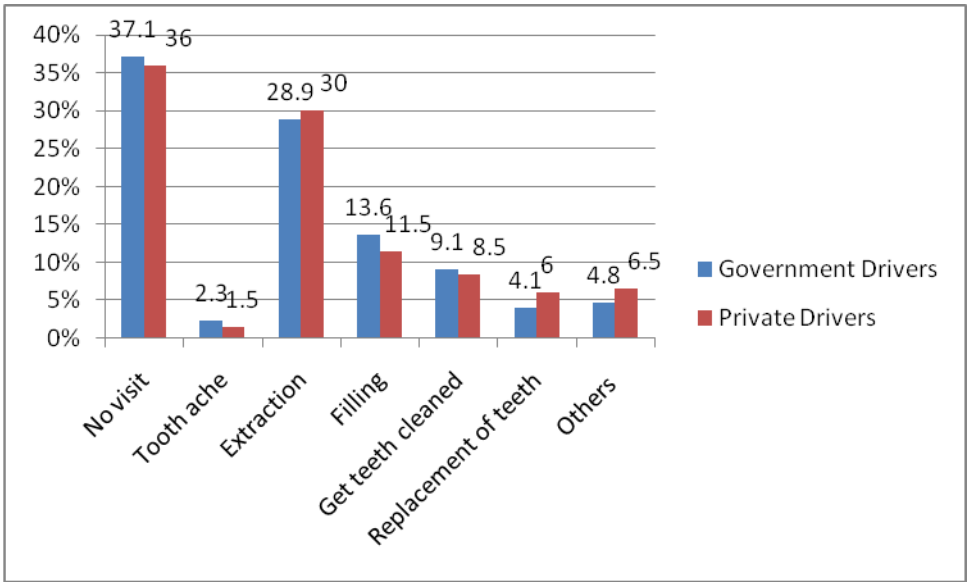


Table 10(b) and Graph 10(b) shows the distribution of study population based on the reason for no previous dental visit. Among 860 drivers, majority of the workers, 543(63.1%) drivers had visited dentist earlier, 67(7.8%) drivers had not visited dentist due to lack of time, 13(1.5%) drivers had not visited due to dentists not available nearby, 93(10.8%) had not visited due to lack of interest , 144(16.7%) drivers had not visited due to other reasons like no problems in their teeth, etc. There was no statistical difference between Government and Private drivers based on reason for no previous dental visit.(Chi-square value= 1.566; p=0.815)

Table 10(b) :Distribution of study population based on reason for no previous dental visit

Reason for no previous visit	Government Drivers	Private Drivers	Total
Had previous visit	415 (62.9%)	128 (64.0%)	543 (63.1%)
Lack of time	55 (8.3%)	12 (6.0%)	67 (7.8%)
Dentists not available nearby	8 (1.2%)	5 (2.5%)	13 (1.5%)
Not interested	72 (10.9%)	21 (10.5%)	93 (10.8%)
Others	110 (16.7%)	34 (17.0%)	144 (16.7%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 1.566; p = 0.815 (non significant)

Graph 10(b) :Distribution of study population based on reason for no previous dental visit

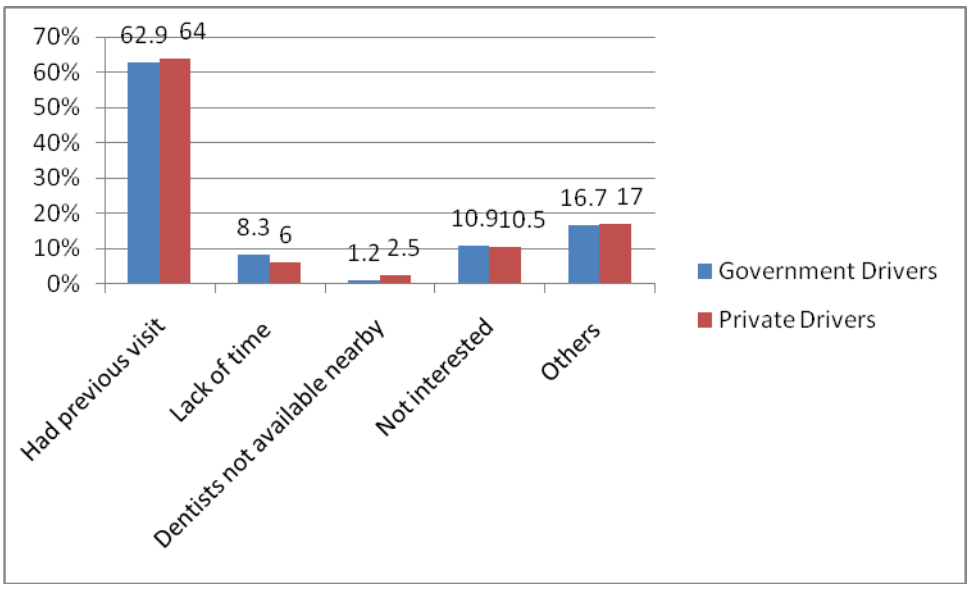


Table 11 and Graph 11 shows the distribution of study population based on whether they felt stress at work. Majority of the study population, 524(60.9%) drivers felt stressed at work and 336(39.1%) drivers had not felt stress at work. Among 524 drivers who felt stress at work, majority 440 of them were Government drivers and 220 of them were private drivers. Statistical test showed a significant difference between Government and Private drivers based on stress at work.(chi square value= 39.230; p=0.000)

Table 11 :Distribution of study population based upon whether they felt stressed at work

Stress	Government Drivers	Private Drivers	Total
Yes	440 (66.7%)	84 (42.0%)	524 (60.9%)
No	220 (33.3%)	116 (58.0%)	336 (39.1%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 39.230; p = 0.000 (significant)

Graph 11: Distribution of study population based upon whether they felt stressed at work

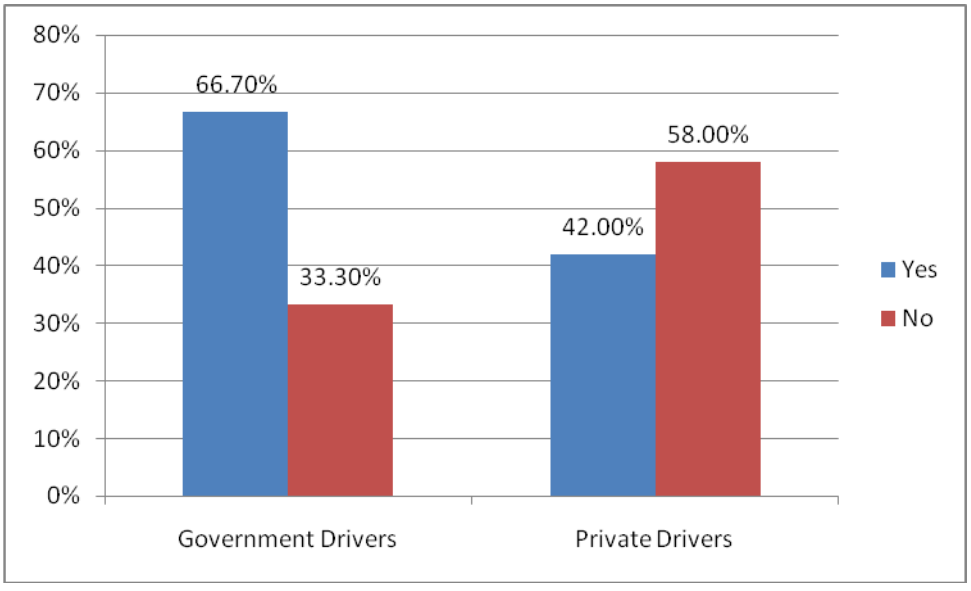


Table 12 (a) presents the frequency of distribution for different domains related to the oral condition in the preceding 12 months by Government and Private drivers. Seven subscales (domains) were created for each item measure using the 14 items of the OHIP – 14 score. Majority of the Government drivers (n=302) responded as 'very often' for the item 'felt tense' in the domain 'psychological discomfort' whereas majority of the Private drivers (n=90) responded as 'very often' for the item 'had a painful aching' in the domain 'physical pain'.

Table 12 (a) : Frequency of reported problems related to the oral condition in preceding 12 months for Government and Private drivers

Domain Individual item	Very often		Fairly often		Occasionally		Hardly ever		Never	
	GD n=660	PD n=200	GD n=660	PD n=200	GD n=660	PD n=200	GD n=660	PD n=200	GD n=660	PD n=200
Functional limitation										
Trouble pronouncing words	100	5	30	4	40	5	5	2	485	184
Felt sense of taste worsened	20	3	10	1	5	2	1	0	624	194
Physical pain										
Had a painful aching	300	90	120	20	93	10	10	1	137	79
Uncomfortable to eat	220	50	5	2	25	8	4	0	406	140
Psychological discomfort										
Have been self conscious	5	0	1	0	3	1	0	0	651	199
Felt tense	302	13	50	20	98	10	25	2	185	155
Physical disability										
Unsatisfactory diet	25	5	30	4	78	10	6	0	521	181
Had to interrupt meals	50	23	121	12	112	25	18	7	359	133
Psychological disability										
Difficult to relax	125	17	100	10	99	6	25	2	311	165
Embarrassed	0	0	3	2	7	1	0	0	650	197
Social disability										
Irritable with other people	40	5	25	4	38	7	0	0	557	184
Difficulty doing usual jobs	24	0	30	2	13	4	0	0	593	194
Handicap										
Life less satisfying	0	0	3	0	5	2	0	0	652	198
Unable to function	0	0	0	0	2	0	1	0	657	200

GD – Government drivers PD – Private drivers

Table 12(b) and Graph 12 shows the mean OHIP total score of the study population . The mean OHIP total score of Government drivers and private drivers were 10.03+ 9.875 and 5.80+ 4.329 respectively. The overall mean and

S.D for the Government and private drivers was 7.915+ 7.102 . Statistical tests showed a significant difference between Government and Private drivers based on OHIP total score .(Mann whitney U = 50790.000; p = 0.000)

Table 12(b) : **Distribution of study population based on mean OHIP total score**

OHIP	Government Drivers n = 660	Private Drivers n = 200
Mean	10.03	5.80
Standard deviation	9.875	4.329

Mann whitney U = 50790.000; p = 0.000 (significant)

Graph 12 : **Distribution of study population based on mean OHIP total score**

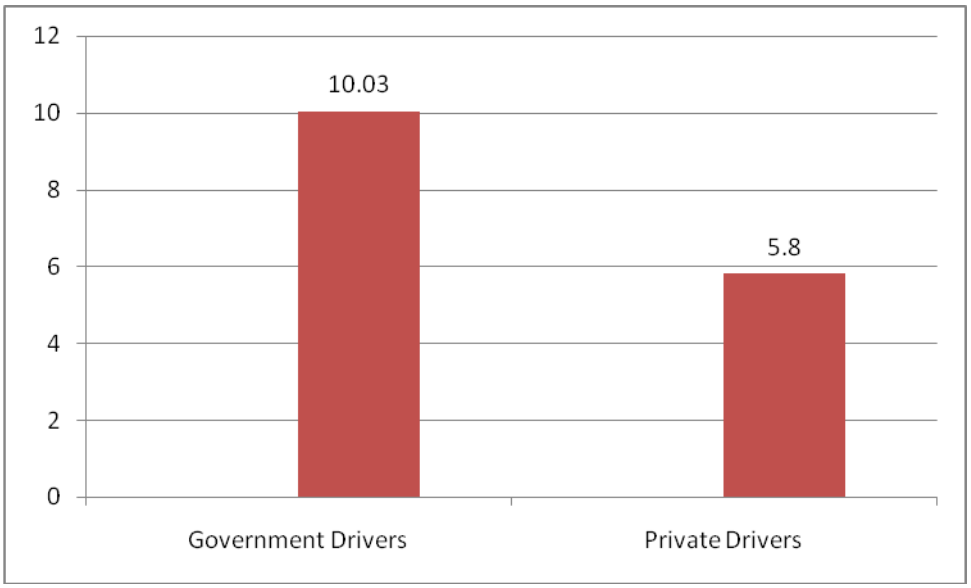


Table 13 and Graph 13 shows the distribution of study population based on the extra oral examination. 23 (2.7%) drivers had ulceration, sore, erosions, fissures in head, neck, limbs, 16 (1.9%) had ulceration, sore, erosions, fissures in nose, cheeks and chin, 6 (0.7%) had ulceration, sores, erosions, fissures in the commissures There is no statistical difference between Government and Private drivers based on extra oral examination. (χ^2= 17.861; p=0.120)

Table 13 : **Distribution of study population based on the extra oral examination**

Extra oral examination	Government Drivers	Private Drivers	Total
Normal	637 (96.5%)	178 (89.0%)	815 (94.8%)
Ulceration,sores,erosions,fissures in head,neck,limbs	11 (1.7%)	12 (6.0%)	23 (2.7%)
Ulceration,sores,erosions,fissures in nose, cheeks, chin	9 (1.4%)	7 (3.5%)	16 (1.9%)
Ulceration,sores,erosions,fissures in commissures	3 (0.5%)	3 (1.5%)	6 (0.7%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 17.861; p = 0.120 (non significant)

Graph 13 : Distribution of study population based on the extra oral examination

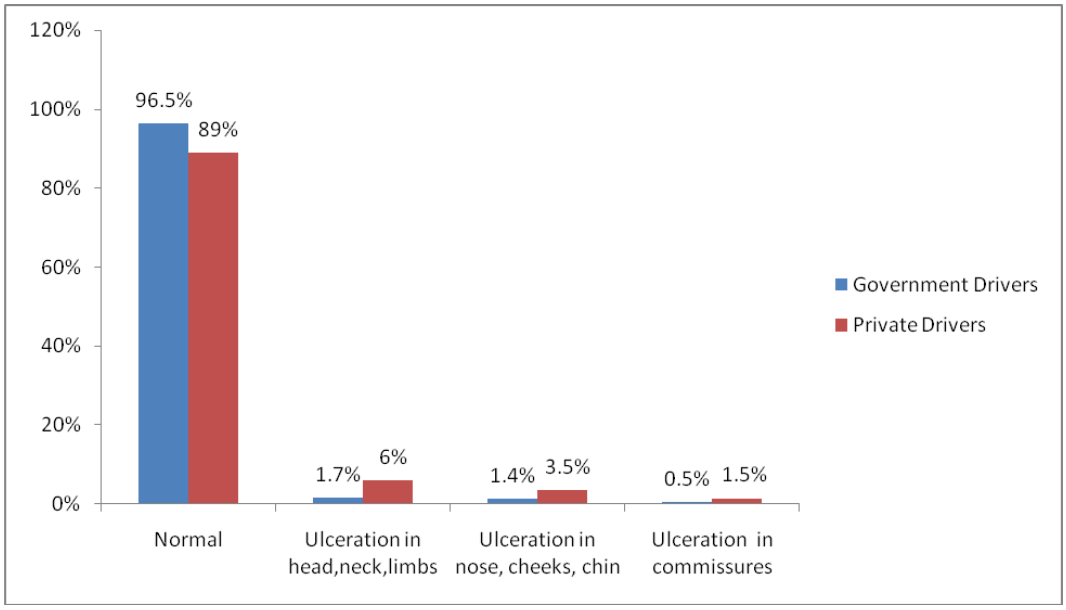


Table 14 and Graph 14 shows the distribution of study population based on any symptoms on signs in the Tempero-mandibular joint. 799(92.9%) drivers of the study population had no signs and symptoms in the joint. 35(4.1%) drivers had clicking, 16(1.9%) workers had tenderness on palpation and 10(1.2%) of the drivers had restricted jaw movements. Statistically, there is no significant difference between Government and Private drivers based on TMJ examination. (χ^2 = 4.221; p=0.239)

Table 14 : Distribution of study population based on the TMJ examination

TMJ assessment	Government Drivers	Private Drivers	Total
None	619 (93.8%)	180 (90.0%)	799 (92.9%)
Clicking	23 (3.5%)	12 (6.0%)	35 (4.1%)
Tenderness	12 (1.8%)	4 (2.0%)	16 (1.9%)
Restricted jaw movements	6 (0.9%)	4 (2.0%)	10 (1.2%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 4.221; p = 0.239 (non significant)

Graph 14 : Distribution of study population based on the TMJ examination

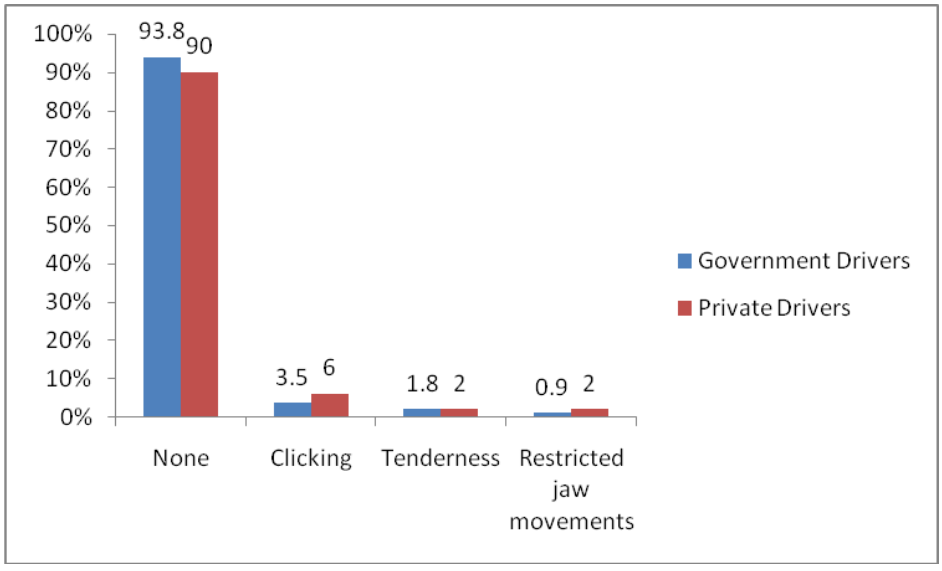


Table 15 and Graph 15 shows the distribution of study population based upon the oral mucosal condition. Majority of the population, 740(86%) drivers had no abnormal condition. 78(9.1%) of the study populations had leukoplakia, 5(0.6%) of them had ulceration, 7(0.8%) of them had candidiasis and 30(3.5%) of them had other abnormal conditions. Statistically, there is significant difference between Government and Private drivers based on oral mucosal condition (χ^2 = 13.344; p=0.010).

Table 15 :Distribution of study population based on the Oral mucosa condition

Oral mucosal lesions	Government Drivers	Private Drivers	Total
No abnormal condition	553 (83.8%)	187 (93.5%)	740 (86.0%)
Leukoplakia	72 (10.9%)	6 (3.0%)	78 (9.1%)
Ulceration	4 (0.6%)	1 (0.5%)	5 (0.6%)
Candidiasis	6 (0.9%)	1 (0.5%)	7 (0.8%)
Other conditions	25 (3.8%)	5 (2.5%)	30 (3.5%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 13.344; p = 0.010 (significant)

Graph 15 :Distribution of study population based on the Oral mucosa condition

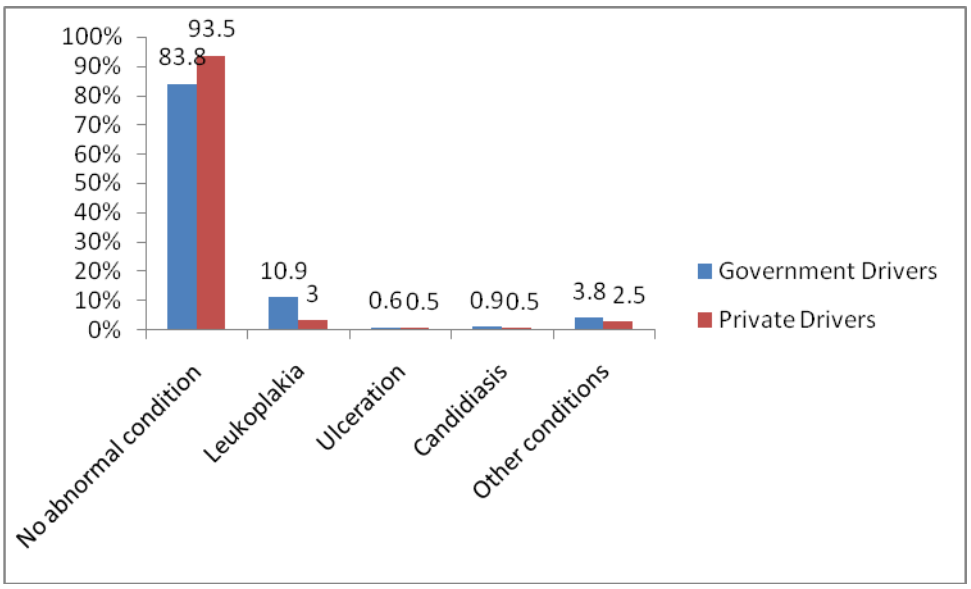


Table 16 and Graph 16 shows distribution of study population based on enamel opacities. Among the total population 849(98.7%) drivers showed normal enamel opacity, 5(0.6%) drivers showed demarcated enamel opacity, 3(0.3%) drivers showed hypoplasia, 3(0.3%) drivers showed diffused enamel opacity. Statistically, there was no significant difference between Government and Private drivers based on enamel opacities (χ^2 = 0.372; p=0.946(non significant)

Table 16:Distribution of study groups based on enamel opacities

Enamel opacity highest	Government Drivers	Private Drivers	Total
Normal	652 (98.8%)	197 (98.5%)	849 (98.7%)
Demarcated opacity	4 (0.6%)	1 (0.5%)	5 (0.6%)
Diffuse opacity	2 (0.3%)	1 (0.5%)	3 (0.3%)
Hypoplasia	2 (0.3%)	1 (0.5%)	3 (0.3%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 0.372; p = 0.946 (non significant)

Graph 16:Distribution of study groups based on enamel opacities

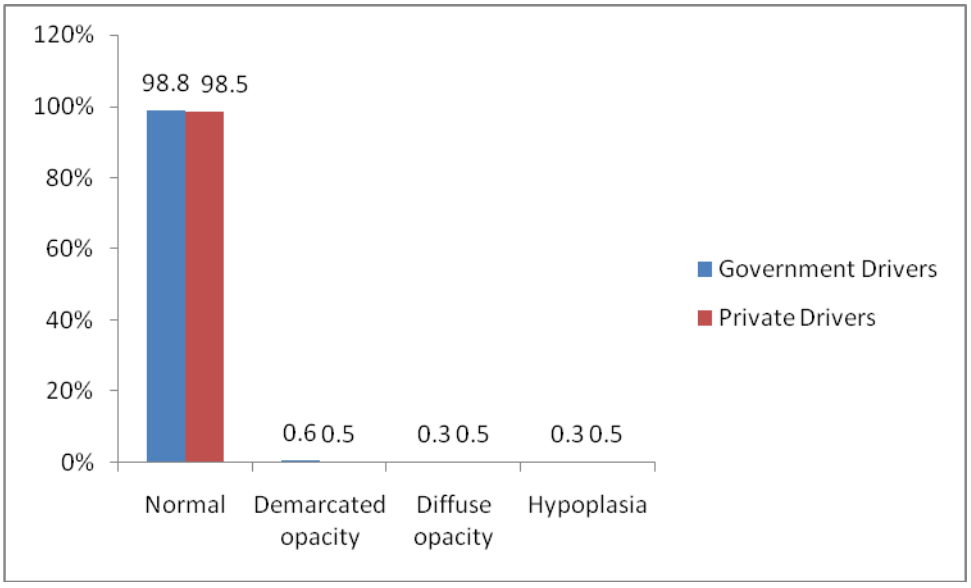


Table 17 and Graph 17 shows distribution of study population based on dental fluorosis. Among the total study population 833(96.9%) drivers showed no

signs of dental fluorosis, 16(1.9%) drivers showed signs of questionable fluorosis, 11(1.3%) drivers had very mild fluorosis. Statistical tests showed no significant difference between Government and Private drivers based on dental fluorosis. (χ^2 = 0.186; p=0.911)

Table 17 :Distribution of study groups based on dental fluorosis

Fluorosis	Government Drivers	Private Drivers	Total
Normal	639 (96.8%)	194 (97.0%)	833 (96.9%)
Questionable	12 (1.8%)	4 (2.0%)	16 (1.9%)
Very mild	9 (1.4%)	2 (1.0%)	11 (1.3%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 0.186; p = 0.911 (non significant)

Graph 17 :Distribution of study groups based on dental fluorosis

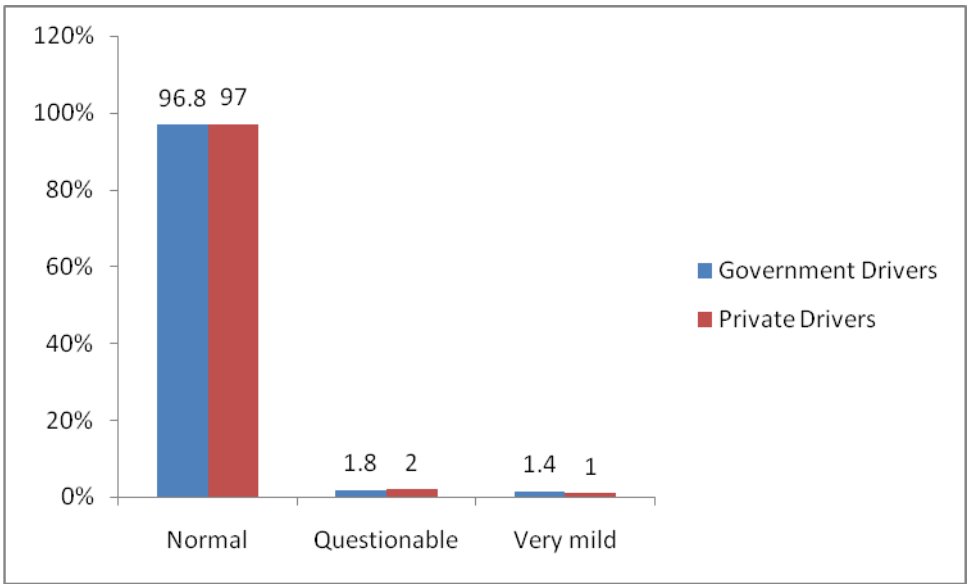


Table 18 and Graph 18 shows distribution of study population based on CPI index. Among the total study population majority, 471(54.8%) drivers had calculus, 8(0.9%) had bleeding, 274(31.9%) drivers had pocket 4-5mm , 107(12.4%) had pocket 6mm or more. Statistical tests showed a significant difference between Government and Private drivers based on CPI index (χ^2 = 18.664; p=0.000)

Table 18 :Distribution of study groups based on CPI index

CPI highest	Government Drivers	Private Drivers	Total
Healthy	0 (0%)	0 (0%)	0 (0%)
Bleeding	5 (0.8%)	3 (1.5%)	8 (0.9%)
Calculus	337 (51.1%)	134 (67.0%)	471 (54.8%)
Pocket 4-5 mm	225 (34.1%)	49 (24.5%)	274 (31.9%)
Pocket 6 mm or more	93 (14.1%)	14 (7.0%)	107 (12.4%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 18.664; p = 0.000 (significant)

Graph 18 :Distribution of study groups based on CPI index

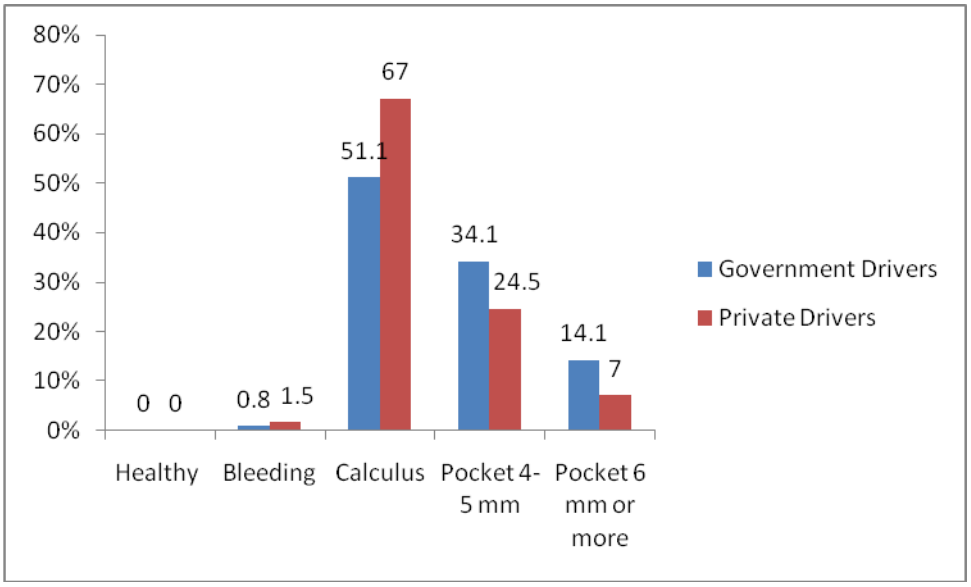


Table 19 and Graph 19 shows distribution of study population based on LOA index. Among the study population, 754(87.7%) drivers had 0-3mm, 18 (2.1%) drivers had 4-5mm loss of attachment, 41(4.8%) drivers had 6-8mm loss of attachment, 29(3.4%) had 9-11mm loss of attachment, 18(2.1%) had loss of attachment 12 mm or more. Statistical test showed significant difference between Government and Private drivers based on loss of attachment (χ^2 = 9.054; p=0.050).

Table 19: Distribution of study groups based on LOA index

LOA highest	Government Drivers	Private Drivers	Total
LOA 0-3 mm	567 (85.9%)	187 (93.5%)	754 (87.7%)
LOA 4-5 mm	16 (2.4%)	2 (1.0%)	18 (2.1%)
LOA 6-8 mm	36 (5.5%)	5 (2.5%)	41 (4.8%)
LOA 9-11 mm	24 (3.6%)	5 (2.5%)	29 (3.4%)
LOA 12 mm or more	17 (2.6%)	1 (0.5%)	18 (2.1%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 9.054; p = 0.050 (significant)

Graph 19 :Distribution of study groups based on LOA index

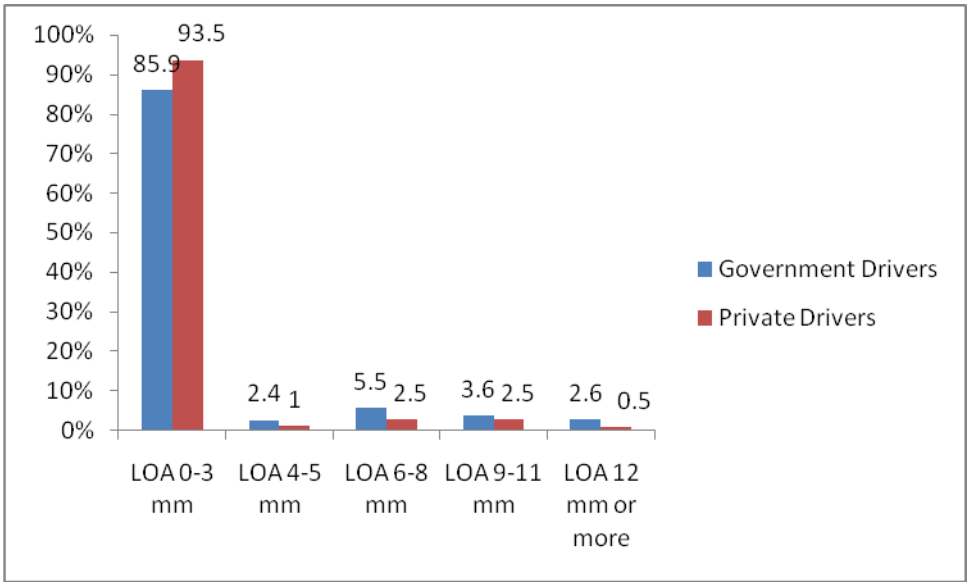


Table 20(a,b and c) shows distribution of study population based on their dentition status and treatment needs. **Table 20(a)** shows 731(85%) drivers had decayed crown, 47(5.5%) drivers had secondary caries, 136(15.8%) drivers had filled crown without any decay, 369(42.9%) drivers had missing teeth due to caries, 316(36.7%) drivers had missing teeth due to other reasons, 27(3.1%) drivers had abutment and 39(4.5%) had trauma.**Table 20(b)** shows 79(9.2%) had decayed root, 106(12.3%) drivers roots were exposed and 558(64.9%) drivers root were not recorded. **Table 20(c)** shows 648(75.3%) needed one surface restoration, 209(24.3%) needed two surface restoration,13(1.5%) needs crown, 182(21.2%) needs pulp care and 247(28.7%) needs extraction

Table 20 (a) : Distribution of study population based on their crown status according to dentition status and treatment needs

Crown status	Government drivers (n=660)	Private drivers (n=200)	Total (n=860)
Decayed			
Yes	560(84.8%)	171(85.5%)	**731(85%)**
No	100(15.2%)	29(14.5%)	**129(15%)**
Filled with decay			
Yes	35(5.3%)	12(6%)	**47(5.5%)**
No	625(94.7%)	188(94%)	**813(94.5%)**
Filled without decay			
Yes	109(16.5%)	27(13.5%)	**136(15.8%)**
No	551(83.5%)	173(86.5%)	**724(84.2%)**
Missing due to caries			
Yes	291(44.1%)	78(39%)	**369(42.9%)**
No	369(55.9%)	122(61%)	**491(57.1%)**
Missing other reason			
Yes	250(37.9%)	66(33%)	**316(36.7%)**
No	410(62.1%)	134(67%)	**544(63.3%)**
Abutment			
Yes	21(3.2%)	6(3%)	**27(3.1%)**
No	639(96.8%)	194(97%)	**833(96.9%)**
Trauma			
Yes	**28 (4.2%)**	**11 (5.5%)**	**39(4.5%)**
No	**632 (95.8%)**	**189 (94.5%)**	**821(95.5%)**

Table 20(b) :Distribution of study population based on their root status according to the dentition status and treatment needs

Root status	Government drivers (n=660)	Private drivers (n=200)	Total (n=860)
Sound			
Yes	92(13.9%)	14(7%)	**106(12.3%)**
No	568(86.1%)	186(93%)	**754(87.7%)**
Decayed			
Yes	65(9.8%)	14(7%)	**79(9.2%)**
No	595(0.9%)	186(93%)	**781(90.8%)**
Root unexposed			
Yes	660(100%)	200(100%)	**860(100%)**
No	0(0%)	0(0%)	**0(0%)**
Root not recorded			
Yes	439(66.5%)	119(59.5%)	**558(64.9%)**
No	221(33.5%)	81(40.5%)	**302(35.1%)**

Table 20(c): Distribution of study population based on treatment needs

Treatment needs	Government drivers (n=660)	Private drivers (n=200)	Total (n=860)
One surface restoration			
Yes	497(75.3%)	151(75.5%)	**648(75.3%)**
No	163(24.7%)	49(24.5%)	**212(24.7%)**
Two surface restoration			
Yes	155(23.5%)	54(27%)	**209(24.3%)**
No	505(76.5%)	146(73%)	**651(75.7%)**
Crown			
Yes	12(1.8%)	1(0.5%)	**13(1.5%)**
No	648(98.2%)	199(99.5%)	**847(98.5%)**
Pulp care			
Yes	140(21.2%)	42(21%)	**182(21.2%)**
No	520(78.8%)	158(79%)	**678(78.8%)**
Extraction			
Yes	197(29.8%)	50(25%)	**247(28.7%)**
No	463(70.2%)	150(75%)	**613(71.3%)**

Table 21 and Graph 20 shows the mean DMFT of the study population. The mean DMFT of Government drivers and private drivers were 5.75+ 3.734 and 5.31+ 3.444 respectively. The overall mean and S.D for the Government and private drivers was 5.53+ 3.589 . There was no statistical difference between the Government and Private drivers based on mean DMFT.(Mann whitney U = 62021.500; p = 0.194)

Table 21 : Distribution of study population based on mean DMFT

DMFT	Government drivers (n=660)	Private drivers (n=200)
Mean	**5.75**	**5.31**
Standard deviation	**3.734**	**3.444**

Mann whitney U=62021.500 p = 0.194 (non significant)

Graph 20 : Distribution of study population based on mean DMFT

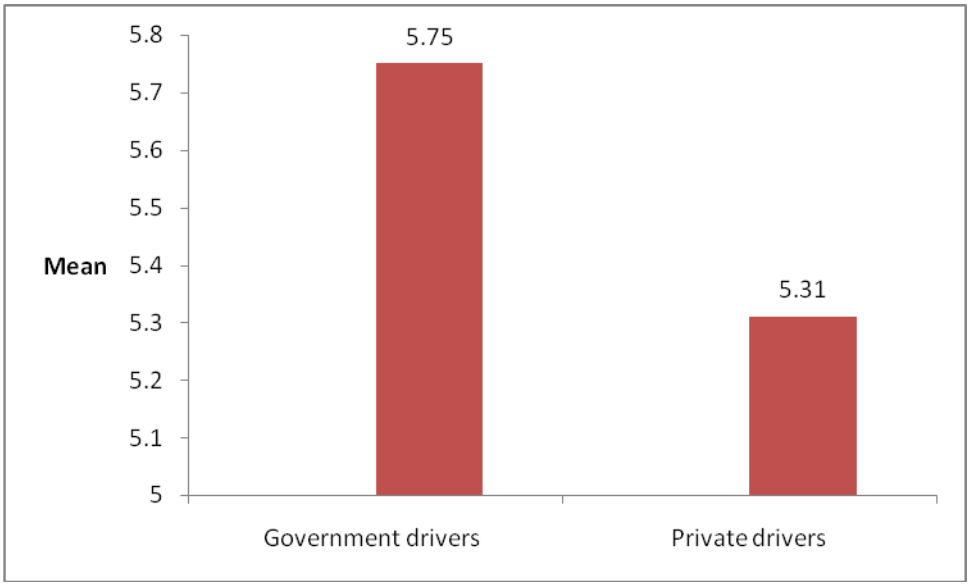


Table 22(a,b) and Graph 21(a,b) shows distribution of study population based on their prosthetic status. Among the total population 4(0.5%) drivers had one bridge, 4(0.5%) drivers had more than one bridge, 14(1.6%) drivers had partial denture in the upper arch. In the lower arch, 7(0.8%) drivers had one bridge, 2(0.2%) drivers had more than one bridge, and 13(1.5%) drivers had partial denture. Statistical test showed no significant difference between Government and Private drivers based on prosthetic status. (for upper, χ^2 =1.880 ; p=0.0.598 and for lower χ^2 = 1.347; p=0.718).

Table 22(a): Distribution of study groups based on their prosthetic status in upper arch

Prosthetic status-upper	Government Drivers	Private Drivers	Total
No prosthesis	641 (97.1%)	197 (98.5%)	838 (97.4%)
Bridge	4 (0.6%)	0 (0%)	4 (0.5%)
More than one bridge	3 (0.5%)	1 (0.5%)	4 (0.5%)
Partial denture	12 (1.8%)	2 (1.0%)	14 (1.6%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 1.880; p = 0.598 (non significant)

Graph 21(a): Distribution of study groups based on their prosthetic status in upper arch

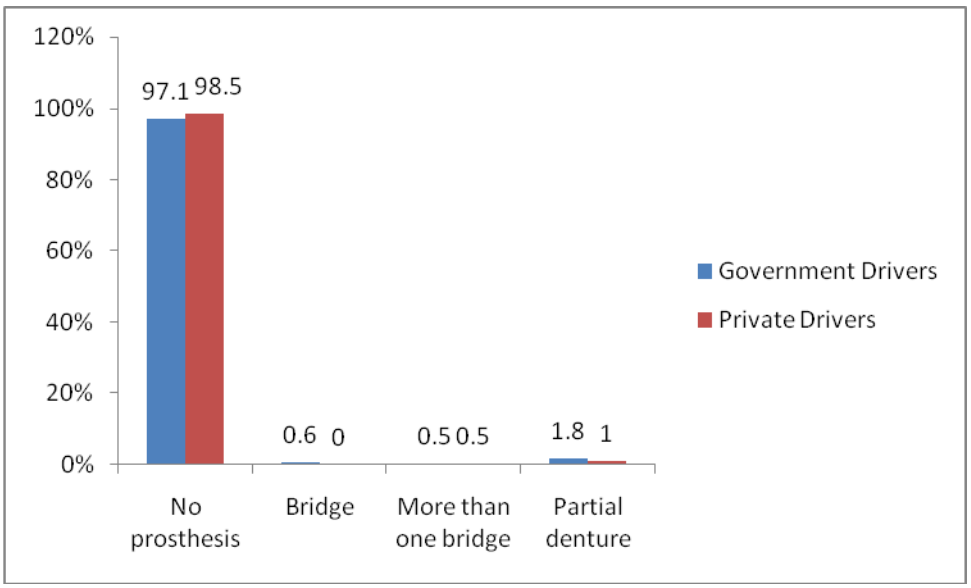


Table 22(b) :Distribution of study groups based on their prosthetic status in lower arch

Prosthetic status-lower	Government Drivers	Private Drivers	Total
No prosthesis	645 (97.7%)	193 (96.5%)	838 (97.4%)
Bridge	5 (0.8%)	2 (1.0%)	7 (0.8%)
More than one bridge	1 (0.2%)	1 (0.5%)	2 (0.2%)
Partial denture	9 (1.4%)	4 (2.0%)	13 (1.5%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 1.347; p = 0.718 (non significant)

Graph 21(b): Distribution of study groups based on their prosthetic status in lower arch

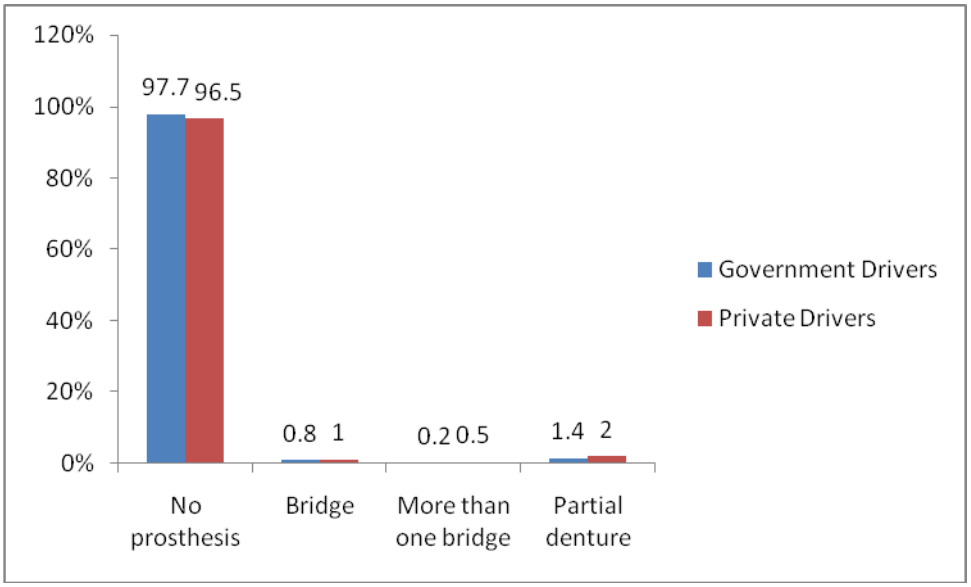


Table 23(a,b) and Graph 22(a,b) showed distribution of study population based on their prosthetic need.

Table 23(a) and Graph 22(a) shows that among 860 study population, 107(12.4%) drivers required one unit prosthesis, 64(7.4%) drivers required multi unit prosthesis and 26(3.0%) drivers required combination of one and multi unit prosthesis in upper arch.

Table 23(b) and Graph 22(b) shows that among the total population, 568(66%) drivers required no prosthesis, 158(18.4%) required one unit prosthesis, 100(11.6%) drivers required multi unit prosthesis, 34(4%) required combination of one and multi unit prosthesis in lower arch. Statistical tests showed no significant difference between Government and Private drivers based on prosthetic need (for upper arch, χ^2 = 0.942; p=0.815, for lower arch χ^2 = 5.380; p=0.146)

Table 23(a) :Distribution of study groups based on their prosthetic need in upper arch

Prosthetic needs-upper	Government Drivers	Private Drivers	Total
No prosthesis needed	504 (76.4%)	159 (79.5%)	663 (77.1%)
One unit prosthesis	85 (12.9%)	22 (11.0%)	107 (12.4%)
Multi unit prosthesis	51 (7.7%)	13 (6.5%)	64 (7.4%)
Combination of one and multi unit prosthesis	20 (3.0%)	6 (3.0%)	26 (3.0%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 0.942; p = 0.815 (non significant)

Graph 22(a): Distribution of study groups based on their prosthetic need in upper arch

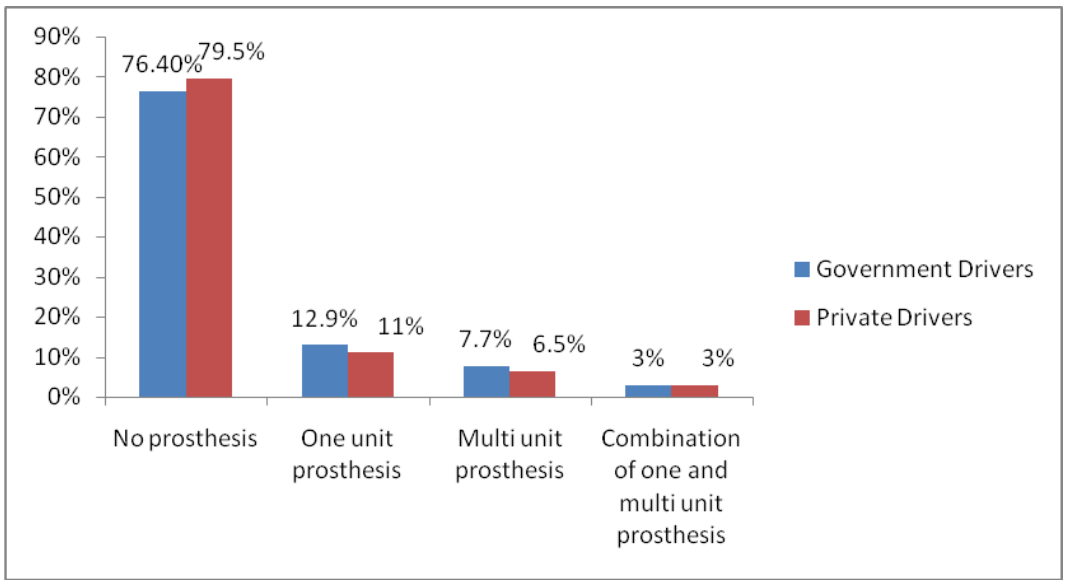


Table 23(b) :Distribution of study groups based on their prosthetic need in lower arch

Prosthetic needs-lower	Government Drivers	Private Drivers	Total
No prosthesis needed	437 (66.2%)	131 (65.5%)	568 (66.0%)
One unit prosthesis	113 (17.1%)	45 (22.5%)	158 (18.4%)
Multi unit prosthesis	84 (12.7%)	16 (8.0%)	100 (11.6%)
Combination of one and multi unit prosthesis	26 (3.9%)	8 (4.0%)	34 (4.0%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 5.380; p = 0.146 (non significant)

Graph 22(b) :Distribution of study groups based on their prosthetic need in lower arch

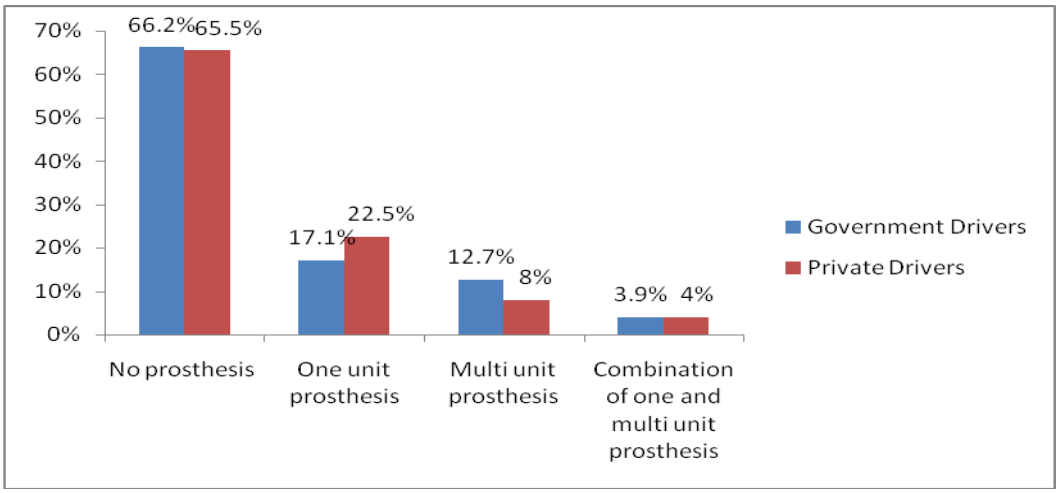


Table 24 and Graph 23 shows the distribution of study population based on life threatening condition. Majority of the population 765(89%) had no life threatening condition and 95(11%) had life threatening conditions. Statistical test showed significant difference between Government and Private drivers based on life threatening condition (χ^2 = 0.9.696; p=0.002)

Table 24 Distribution of study population based on life threatening condition

Life threatening condition	Government Drivers	Private Drivers	Total
Absent	575 (87.1%)	190 (95.0%)	765 (89.0%)
Present	85 (12.9%)	10 (5.0%)	95 (11.0%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 9.696; p = 0.002 (significant)

Graph 23: Distribution of study population based on life threatening condition

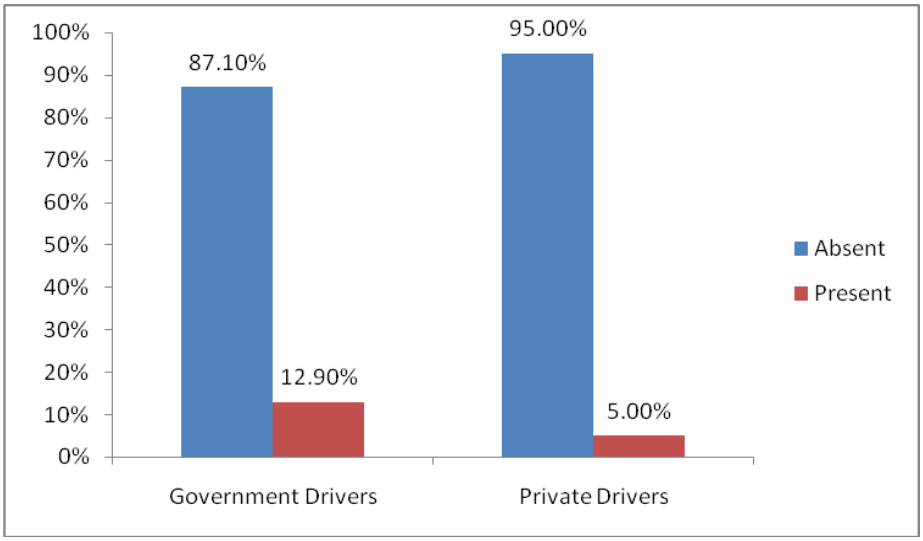


Table 25 and Graph 24 shows the distribution of study population based on dental pain or infection. Majority of the population 842(97.9%) had no signs and symptoms of pain and/or infection and 18(2.1%) had signs and symptoms of pain and/or infection. Statistical test showed no significant difference between Government and Private drivers based on signs and symptoms of pain and/or infection ($\chi^2 = 0.447$; p=0.504)

Table 25: Distribution of study population based on dental pain or infection

Pain or infection	Government Drivers	Private Drivers	Total
Absent	645 (97.7%)	197 (98.5%)	842 (97.9%)
Present	15 (2.3%)	3 (1.5%)	18 (2.1%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 0.447; p = 0.504 (non significant)

Graph 24: Distribution of study population based on dental pain or infection

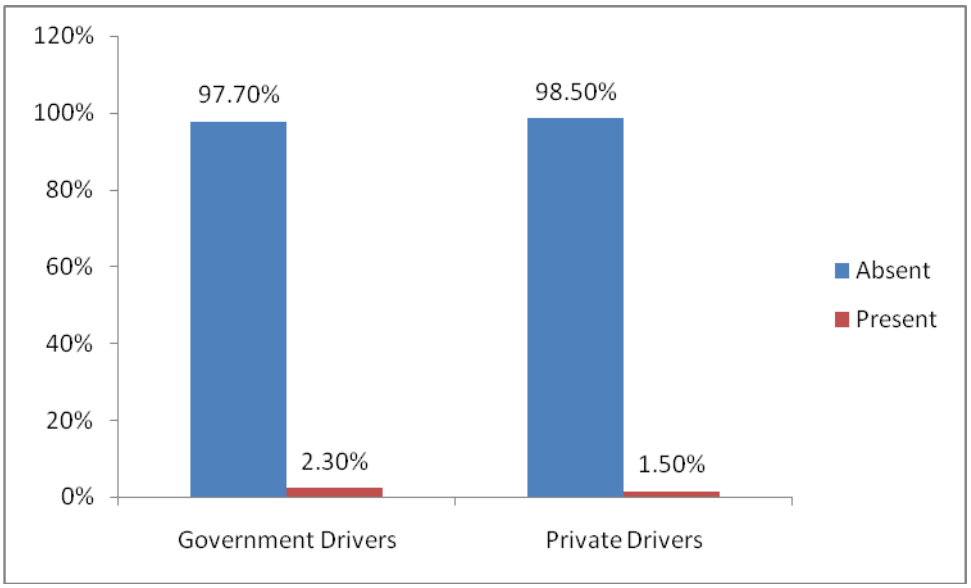


Table 26 and Graph 25 shows distribution of study population based on referral of patients for treatment. 860(100%) drivers were referred. Statistical test showed no significant difference between Government and Private drivers based on referral of patients for treatment ($\chi^2 = 0.912$; p=0.340)

Table 26: Distribution of study population based on referral for treatment

Referral	Government Drivers	Private Drivers	Total
No	0 (0%)	0 (0%)	0 (0%)
Yes	660 (100%)	200 (100%)	860 (100%)
Total	660 (100%)	200 (100%)	860 (100%)

Chi square value = 0.912 p = 0.340 (non significant)

Graph 25: Distribution of study population based on referral for treatment

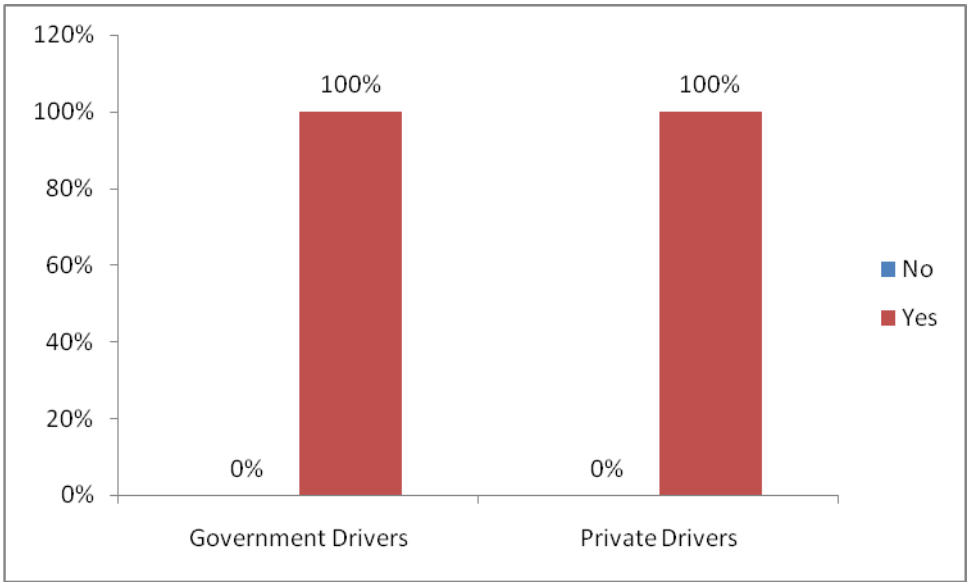


Table 27 shows the distribution of OHIP scores and DMFT scores among the study population. The mean OHIP of Government drivers and Private drivers

were 10.03 and 5.80 respectively. The mean DMFT of Government drivers and Private drivers were 5.75 and 5.31 respectively . There was statistically significant association between OHIP and DMFT among the study population.(r= 0.436** ; p = 0.000 for Government drivers and r= 0.478**; p = 0.000 for Private drivers)

Table 27 :**Distribution of OHIP scores and DMFT scores among study population**

	Government Drivers		Private Drivers	
	OHIP total score	**DMFT**	**OHIP total score**	**DMFT**
Mean	10.03	5.75	5.80	5.31
Correlation coefficient	**0.436****		**0.478****	
P value	0.000		0.000	

**** Correlation is significant at the 0.01 level (2-tailed)**

Table 28(a) shows the distribution of OHIP scores and CPI scores among Government drivers. Among the 660 Government drivers, the mean OHIP for those who had bleeding, calculus, pocket 4-5mm and pocket 6mm or more were 1.20, 4.27, 12.43 and 25.62 respectively. Statistical tests showed a significant

association between OHIP and CPI among Government drivers. (chi square = 303.334; p = 0.000)

Table 28(a) :Distribution of OHIP scores and CPI scores among Government drivers

CPI	N	OHIP mean	95% confidence interval for the mean
Bleeding	5	1.20	-2.13 – 4.53
Calculus	337	4.27	3.46 – 5.08
Pocket 4-5 mm	225	12.43	11.21 – 13.65
Pocket 6 mm or more	93	25.62	24.28 – 26.97
Total	660	10.03	9.20 – 10.87

Chi square = 303.334 p value = 0.000 (significant)

Table 28(b) shows the distribution of OHIP scores and CPI scores among Private drivers. Among the 200 Private drivers, the mean OHIP for those who had bleeding, calculus, pocket 4-5mm and pocket 6mm or more were 0.00, 3.25, 8.20 and 23.00 respectively. Statistical tests showed a significant association between OHIP and CPI among Private drivers. (chi square = 82.897; p = 0.000)

Table 28(b) : Distribution of OHIP scores and CPI scores among Private drivers

CPI	N	OHIP mean	95% confidence interval for the mean
Bleeding	3	0.00	0.00 – 0.00
Calculus	134	3.25	2.10 – 4.39
Pocket 4-5 mm	49	8.20	6.31 – 10.10
Pocket 6 mm or more	14	23.00	20.14 – 25.86
Total	200	5.80	4.63 – 6.96

Chi square = 82.897 p value = 0.000 (significant)

Table 29(a) shows the distribution of OHIP scores and LOA scores among Government drivers. Among the 660 Government drivers, the mean OHIP for those who had LOA 0-3mm, 4-5mm, 6-8mm, 9-11mm and 12mm or more were 7.48, 25.63, 22.33, 26.25 and 31.71 were 1.20, 4.27, 12.43 and 25.62 respectively. Statistical tests showed a significant association between OHIP and LOA among Government drivers. (chi square = 175.608; p = 0.000)

Table 29(a) :Distribution of OHIP scores and LOA scores among Government drivers

LOA	N	OHIP mean	95% confidence interval for the mean
LOA 0-3mm	567	7.48	6.72 – 8.24
LOA 4-5mm	16	25.63	22.94 – 28.31
LOA 6-8mm	36	22.33	20.06 – 24.61
LOA 9-11mm	24	26.25	24.12 – 28.38
LOA 12mm or more	17	31.71	29.30 – 34.12
Total	660	10.03	9.20 – 10.87

Chi square = 175.608 p value = 0.000 (significant)

Table 29(b) shows the distribution of OHIP scores and LOA scores among Private drivers. Among the 200 Private drivers, the mean OHIP for those who had LOA 0-3mm, 4-5mm, 6-8mm, 9-11mm and 12mm or more were 4.50, 20, 24, 24.40 and 20 respectively. Statistical tests showed a significant association between OHIP and LOA among Private drivers. (chi square = 37.162; p = 0.000)

Table 29(b) :Distribution of OHIP scores and LOA scores among Private drivers

LOA	N	OHIP mean	95% confidence interval for the mean
LOA 0-3mm	186	4.50	3.49 – 5.51
LOA 4-5mm	3	20	20.00 – 20.00
LOA 6-8mm	5	24	17.20 – 30.80
LOA 9-11mm	5	24.40	16.87 – 31.93
LOA 12mm or more	1	20	20.00 – 20.00
Total	200	5.80	4.63 – 6.96

Chi square = 37.162 p value = 0.000 (significant)

Table 30 shows the distribution of OHIP scores and oral mucosal lesions among the study population. Among the 660 Government drivers, the mean OHIP for those who had oral mucosal lesions was 22.47 and for those without any lesions was 7.63. Among the 200 Private drivers, the mean OHIP for those who had oral mucosal lesions was 20 and for those without any lesions was 4.81. Statistical tests showed a significant association between OHIP and oral mucosal lesions among the study population. (Mann – Whitney U = 8266.000; p = 0.000

for Government drivers and Mann – Whitney U = 175.500; p = 0.000 for Private drivers)

Table 30: Distribution of OHIP scores and oral mucosal lesions among study population

	Government drivers		Private drivers	
OHIP	**With lesions**	**Without lesions**	**With lesions**	**Without lesions**
Mean	22.47	7.63	20	4.81

Mann-Whitney U	**8266.000**	**175.500**
P value	0.000	0.000

Table 31(a) shows the distribution of OHIP scores and prosthetic status among Government drivers. Among the 660 Government drivers, the mean OHIP for those who had no prosthesis, who had fixed partial denture and removable partial denture were 9.64, 9.85 and 23.16 respectively. Statistical tests showed a significant association between OHIP and prosthetic status among Government drivers. (chi square = 24.502; p = 0.000)

Table 31(a): Distribution of OHIP scores and prosthetic status among Government drivers

Prosthetic status	N	OHIP mean	95% confidence interval for the mean
No prosthesis	628	9.64	8.80 – 10.49
Fixed partial denture	13	9.85	4.33 – 15.36
Removable partial denture	19	23.16	20.59 – 25.72
Total	660	10.03	9.20 – 10.87

Chi square = 24.502 p value = 0.000 (significant)

Table 31(b) shows the distribution of OHIP scores and prosthetic status among Private drivers. Among the 200 Private drivers, the mean OHIP for those who had no prosthesis, who had fixed partial denture and removable partial denture were 5.28, 7.50 and 24 respectively. Statistical tests showed a significant association between OHIP and prosthetic status among Private drivers. (chi square = 13.801; p = 0.001)

Table 31(b) : Distribution of OHIP scores and prosthetic status among Private drivers

Prosthetic status	N	OHIP mean	95% confidence interval for the mean
No prosthesis	191	5.28	4.16 – 6.40
Fixed partial denture	4	7.50	-6.28 – 21.28
Removable partial denture	5	24	17.20 – 30.80
Total	200	5.80	4.63 – 6.96

Chi square = 13.801 p value = 0.001 (significant)

Table 32 shows the distribution of sweet scores and DMFT scores among study population. The mean sweet score of Government drivers and Private drivers were 33.94 and 32.13 respectively. The mean DMFT of Government drivers and Private drivers were 5.75 and 5.31 respectively . There was statistical association between sweet score and DMFT among the study population.(r= 0.950** ; p = 0.000 for Government drivers and r= 0.980**; p = 0.000 for Private drivers)

Table 32 : Distribution of sweet scores and DMFT scores among study population

	Government Drivers		Private Drivers	
	Sweet score	**DMFT**	**Sweet score**	**DMFT**
Mean	33.94	5.75	32.13	5.31
Correlation coefficient	**0.950****		**0.980****	
P value	0.000		0.000	

**** Correlation is significant at the 0.01 level (2-tailed)**

DISCUSSION

The present study is a cross sectional investigation to assess the oral health status and treatment needs of professional bus drivers in Chennai. The study population comprised of 860 bus drivers in which 660 were from Government Institution (MTC) and 200 were from private establishments. The influence of oral hygiene habits, diet, life style habits, education level, income level, dental visits, stress levels, oral health status and oral health related quality of life of the study population were also assessed.

In this study the WHO Oral Health Assessment Proforma (basic oral health survey 1997) was used to assess the oral health status and treatment needs of the study population. A pretested questionnaire consisting of tobacco habits, utilization of dental care services, oral hygiene practices etc and oral health impact profile 14 was used to assess the oral health related quality of life.

In this study, majority of the population, i.e.,454(52.8%) drivers of the total population studied secondary education, among which majority of them i.e 357 of them were Government drivers and 97 of them were private drivers. None of the government drivers were in the primary education category. This is because the Government drivers are eligible to work in MTC only if they have completed their secondary education. A similar study conducted by **Dilip CL (2005)**[7] among police recruits in Karnataka reported that almost half the population (46%) were matriculates. Graduates and undergraduates constituted around 22% each. The above three qualifications constituted 91% of the total population. Below matriculate and post graduate constituted the remaining 9% of the total population. A study conducted by **Zavras AI et al (2002)**[21] among Greek Navy

recruits reported that an overall improvement was noted in the majority of "Knowledge" and "Attitudes" variables in 1996, as compared to 1985. Education seems to play an important role in both knowledge and attitudes. These changes may also be partially attributed to a shift in consuming standards from the coverage of main needs to income disposal directed towards the achievement of better quality of life.

SWEET SCORE:

It was observed that majority of the study population consumed coffee and tea more than three times during their working hours and were in watch out zone. The reasons for this practice may be attributed to the requirement of concentration during work and probably are one of the methods to relax at work place. The mean sweet score was found to be 33.94 for Government drivers and 32.13 for private drivers This was similar to the study done by **Chandra MK et al (2009)**[10] in Bangalore among the bank employees where majority of the study population consumed coffee and tea more than three times during their working hours for requirement of concentration during work.

In the present study, there was significant correlation between sweet score and DMFT (p = 0.000) . This was similar to a study conducted by **Akrad ZT et al (2009)**[22] in Iran among sweets and cable industry workers where the mean DMFT in sweets factory was 12.59 and in cables factory it was 9.7. This might be due to consumption of sweets and neglecting oral hygiene among workers of the sweets factory. **Masalin K et al (1992)**[23] studied the dietary habits and dental health behavior of 294 employees in a Finnish confectionery company to determine the reasons for their dental caries experience and their caries-promoting

salivary microbiological findings. Statistically significant differences in dietary habits between the low- and high-risk groups were found for the entire study population and for the men, the cookie makers, and the sweets makers. A significant positive correlation was found between untreated caries and the number of sugary meals. No differences were found in dental health behavior or dental knowledge between the study groups

DENTAL VISITS AMONG STUDY POPULATION

Of the total study population 317(36.9%) drivers had not visited any dentist before. Of those visited majority 251(29.2%) visited for extraction. This was due to low socioeconomic status, lack of oral health awareness, lack of visit to dentist, fear of dentist, lack of time as working time schedule is less flexible, the cost of treatment was too high and people visited dentists only at the severe stage. This was similar to the study done by **Reddy CS et al (2010)**[3] among Karnataka state road transport drivers and employees in Mysore where the office staff visited the dentist maximum (55.6%) number of times compared to the other employee groups and drivers the least (38.1%). The most common reason for visit was extraction (47.9%), followed by 18.6% for restorations, 16.4% for oral prophylaxis, 11.1% for other reasons and lastly 5.9% for replacement of teeth.

Another similar study done by **Dilip CL (2005)**[7] among police recruits in Karnataka reported that 73% of the total population visited a dentist earlier. Tooth pain (43%) and bleeding gums (17%) accounted for 60% of the total response. The other reasons (13%) included annual check up, tartar, bad breath and aphthous ulcers.

A similar study by **Sohi R et al (2010)[12]** among police personnel in Haryana, reported that more than half of the study population blamed 'lack of time' as the major reason for not visiting the dentist.

This was similar to the study done by **Srikandi TW et al (1982)[24]** in Adelide, Australia where 60.2% subjects felt that there was 'nothing wrong', 16.4% said they were 'too busy or could not be bothered'. 'fear of dentist' and 'cost' associated for 8% workers.

Another similar study done by **Kawamura M et al (1999)[25]** among Japanese employees reported that 44% of their study population did not visit the dentist due to lack of time.

Hamasha AH et al (2000)[26] conducted a study on Jordanian adults which stated that people gave dental health a low priority in their lives, especially for the more expensive dental treatment thus, extraction of teeth was the most common treatment modality among people of low socioeconomic status.

STRESS AT WORK

The present study showed 524 (60.9%) workers felt stressed at work in which majority of them were Government drivers. This might be due to various factors like work shift, working environment, working posture, long working hours and limited time off. This finding was similar to the study done by **Reddy CS et al (2010)[3]** among Karnataka state road transport drivers and employees in Mysore where 73.7% drivers experienced stress at work , followed by conductors 67.7%, office staff 66.1% and mechanics 63.7%

Another similar study done by **Chandra MK et al (2009)[10]** among bank employees in Bangalore reported that 15.7% were at low stress, 69.1% were at

medium stress levels and 15.2% were highly stressed. In this, the major stressors appeared to be time pressure problems, increased expectation from clients, need to perform more with less time and inter personal emotional problems at work. It was also found that the stress levels increase as the age increases and higher stress levels are significantly related to 35 years and above. This is because the job pressure, responsibility and decision making is usually centered around the experienced professional and this experience goes hand in hand with increased years of service.

Another study conducted by **Naveen N et al (2010)**[2] among police personnel in Mysore reported that 77.2% had moderate stress and 22.8% had severe stress. Officers and head constables had a higher stress compared to police constables. This was because of their busy work schedule and irregular work shifts deprive them of their routine sleeping pattern and social activities.

Hamissi J et al (2010)[13] conducted a study among 496 patients in Iran. They reported that a lower level of suffering from chronic stress was associated with lower clinical attachment loss $p = 0.001$. the effects of stress hormones tend to accumulate and build up. Reduced salivary flow contributes to the decreased self cleansing action thus leading to plaque accumulation and calculus formation. The reduced salivary flow also lowers immune response along with the existing local factors like plaque and increases the risk of periodontal inflammation.

This finding was similar to the study done by **Dagli RJ et al (2008)**[27] among green marble mine workers at Rajasthan, India where 65% workers experienced stress at work due to increased physical load, poor economic status and noisy working environment.

TOBACCO HABITS AND ALCOHOL CONSUMPTION

The present study showed that 80(9.3%) drivers had the habit of tobacco chewing, smoking tobacco and alcohol consumption. This might be due to they felt that these habits provide a kind of relaxation from their job stress. In a study conducted by **Reddy CS et al (2010)[3]** among Karnataka state road transport drivers and employees in Mysore, the drivers were found to have maximum prevalence of smoking (44.7%), pan chewing (33.3%) and alcohol consumption (40.92%)

A similar study conducted by **Dilip CL (2005)[7]** among police recruits in Karnataka reported that 56% of the study population had smoking habit, 29% of them had tobacco chewing habit.

Another study done by **Naveen N et al (2010)[2]** among police personnel in Mysore reported that 38.4% of them had the habit of smoking only, 12.8% had the habit of alcohol consumption, 1.4% had pan chewing and 1% had gutkha chewing.

A study conducted by **Chandra MK et al (2009)[10]** among bank employees in Bangalore reported that 5.5% of them consumed alcohol and smoked tobacco and 3.3% had tobacco chewing habit. In all the above studies, stress was considered as one main reason for using of tobacco related products.

ORAL HYGIENE PRACTICES

It was observed in the present study that 836(97.2%) drivers used tooth brush and tooth paste for brushing their teeth and 3(0.3%) used others like neem stick, charcoal,etc. Moreover majority of them 680(79.1%) brushed once daily, 178(20.7%) brushed twice daily and majority of them changed their tooth brush

once in 3 months and 68 (7.9%) changed their tooth brush once it is worn out. This finding was similar to the study done by **Dilip CL (2005)**[7] among police recruits in Karnataka where 82% of them used tooth brush and tooth paste followed by tooth powder and brush (14%) , 53% changed their brush within 6 months , and 35% changed it when it was worn out, 33% cleaned their teeth once a day and 58% cleaned their teeth twice a day and 90% of them cleaned their gums and tongue after brushing their teeth.

ORAL MUCOSAL LESIONS

In the present study 78(9.1%) of the study populations had leukoplakia, 5(0.6%) of them had ulceration, 7(0.8%) of them had candidiasis and 30(3.5%) of them had other abnormal conditions like oral submucous fibrosis, smokers palate. Prevalence of leukoplakia in the study population is due to their habits like tobacco usage and alcohol consumption. In a study conducted by **Reddy CS et al (2010)**[3] among Karnataka state road transport drivers and employees in Mysore, the prevalence of leukoplakia was 3.1% and oral submucous fibrosis was 0.3%

Nutritional deficiency and stress may be the cause for ulcers in the mouth. A similar study by **Sohi R et al (2010)**[12] among police personnel in Haryana, reported that the prevalence of leukoplakia was 0.3% and smokers palate was 4.3%. Maximum lesions (66.67%) were present on the palate followed by buccal mucosa (26.19%).

TEMPOROMANDIBULAR JOINT:

In the present study, examination of TMJ showed that 35(4.1%) drivers had clicking noise, 16(1.9%) drivers had tenderness on palpation in TMJ region and 10(1.2%) of the drivers had restricted jaw movements. This may be due to the

stress among the drivers in the working environment. In a study done by **Dilip CL (2005)**[7] among police recruits in Karnataka reported that only 1% of the subjects had conditions of pain and clicking associated with TMJ. A similar study conducted by **Ahuja A et al (2003)**[6] among the army personnel reported that TMJ clicking was found in 7 army personnel, tenderness was found in 1 jawan, and reduced jaw mobility was detected in 1 jawan.

ENAMEL OPACITIES

In the present study it was observed that 5(0.6%) drivers showed demarcated enamel opacity, 3(0.3%) drivers showed hypoplasia, 3(0.3%) drivers showed diffused enamel opacity This might be due to nutritional deficiency. A similar study done by **Dilip CL (2005)**[7] among police recruits in Karnataka reported that enamel opacities was seen in 1% of the study population.

DENTAL FLUOROSIS:

In the present study 16(1.9%) drivers showed signs of questionable fluorosis, 11(1.3%) drivers had very mild fluorosis.. In a study done by **Dilip CL (2005)**[7] among police recruits in Karnataka reported that questionable and very mild fluorosis were seen in 13% each. Mild and moderate fluorosis were seen in 2% and 1% respectively.

A similar study by **Sohi R et al (2010)**[12] among police personnel in Haryana, reported that most of the subjects (95.38%) had dental fluorosis with maximum subjects having questionable (73.60%) and very mild (18.55%) dental fluorosis.

PERIODONTAL DISEASE:

The present study showed 471(54.8%) drivers had calculus, 8(0.9%) had bleeding, 274(31.9%) drivers had pocket 4-5mm , 107(12.4%) had pocket 6mm or more. The etiology and pathogenesis of periodontal disease involves a complicated interplay between the plaque etiological agents and various genetic and environmental risk factors. However, in the present study the increase in prevalence of periodontal disease might be due to presence of practices related to tobacco habits and, lack of awareness about oral health. The results in our present study were similar with the study done by **Reddy CS et al (2010)**[3] among Karnataka state road transport drivers and employees in Mysore where the prevalence of periodontal disease was higher among the drivers (72.3%) than the other employees (61.6%). This difference was due to a higher percentage of smokers among drivers (44.7%) than other employees (23.6%).

A study conducted by **Chandra MK et al (2009)**[10] among bank employees in Bangalore reported that 24.5% of the subjects presented with a healthy periodontal condition. 21.2% presented with bleeding on probing, 38.9% presented with the calculus score. Moreover the periodontal conditions increased as the age increased. These results emphasizes on the fact that the need for primary self care and periodontal care is to be considered for this subset of population.

A similar study by **Sohi R et al (2010)**[12] among police personnel in Haryana, reported that 23.6% had a healthy periodontium while 61.3% had calculus. Subjects with higher education had better periodontal health than those with lower education. This might be due to the habit of regularly using oral

hygiene maintenance aids. Moreover poorer periodontal health was found in diabetics.

In a study done by **Dilip CL (2005)**[7] among police recruits in Karnataka reported that calculus were found in 53% of subjects, bleeding in 37%, shallow and deep pockets in 1% of subjects. The high prevalence of calculus may be due to their inadequate oral hygiene maintenance and the severity increased with age.

Another study done by **Naveen N et al (2010)**[2] among police personnel in Mysore reported that 0.3% had healthy periodontium, 2% had bleeding, 31% had calculus, 39.1% had shallow pockets and 27.3% had deep pockets. This is due to the fact that these people had irregular work shifts so they were not able to concentrate on their oral hygiene, they had higher prevalence of adverse habits like smoking, alcohol and pan chewing, stress level was also on the higher side.

A study conducted by **Sandoval RM et al (2008)**[9] among Spannish military personnel reported that only 7.2% were healthy, 10.1% presented bleeding, calculus was present in 72.6%, 7.8% had pockets of 4-5mm and 2.3% had pockets of 6mm or more.

A study conducted by **Corbet et al (2001)**[28] among adult southern Chinese reported that Calculus was found as the highest CPI score in 61-68% of the 35- to 44-year-old subjects and in 54-57% of the 65- to 74-year-olds. Shallow pockets were found as the highest CPI score in about one-third of both the urban and the rural subjects in both age groups, and deep pockets in 3-7% of the subjects. Attachment Loss was more prevalent than pockets in both age groups. This might be due to being male, wearing partial dentures, and reporting less frequent toothbrushing .

Pilot T et al (1994)[29] showed in their studies done on factory workers in Shangai, China and worker population Araraquara, in Brazil which reported that the presence of dental calculus was the most frequently observed periodontal condition

LOSS OF ATTACHMENT:

The present study showed that majority 754(87.7%) drivers had 0-3mm loss of attachment. A study conducted by **Chandra MK et al (2009)[10]** among bank employees in Bangalore reported that majority of the subjects (40.2%) presented with LOA 4-5 mm. An important correlate with the presence of LOA in this study was the presence of plaque, supragingival and subgingival calculus. This is due to the fact that formation of plaque, calculus and loss of attachment is attributed to the various types of stressors experienced by the bank employees.

A study done by **Reddy CS et al (2010)[3]** among Karnataka state road transport drivers and employees in Mysore reported a significant association between the age groups and loss of attachment among drivers and other employees. Overall the younger age groups had lesser loss of attachment compared to older age groups.

Another study done by **Naveen N et al (2010)[2]** among police personnel in Mysore reported that 65% had no loss of attachment. The scores increased as the age increased. The reason for such a high percentage of score 0 was mainly because 70% of the study population was below the age of 45.

DENTAL CARIES :

The prevalence of dental caries among the study population is 731(85%) drivers had decayed crown, 47(5.5%) drivers had secondary caries. The increase

in the prevalence of dental caries can be due to lower socioeconomic status, poor oral hygiene practices and high sweet score. The findings were in agreement with the previous study conducted by **Reddy CS et al (2010)[3]** among Karnataka state road transport drivers and employees in Mysore reported where the prevalence of dental caries was (45.7%) high among the drivers than the other employees (37.2%). The difference might be due to higher amounts of sweet consumption (47.9%) and poor oral hygiene practices (80.3%) among drivers when compared to the other employees (25% and 73.2%)

A similar study by **Sohi R et al (2010)[12]** among police personnel in Haryana, reported that the prevalence of dental caries was 54.3% . In this the low prevalence may be because police personnel stay for long time in their working environment and hence shall have very low sugar exposure.

Mean decayed, missing and filled teeth:

The mean DMFT of the study population in the present study was 5.75 for Government drivers and 5.31 for private drivers.. It is evident from this study that the mean of missed teeth component in study population is more (7.54) than the mean component of filled teeth (0.425). The mean of decayed component is 8.77. This clearly shows that the drivers prefer to undergo extraction than restoring the teeth. The lack of dental visit, high cost of treatment and lack of knowledge about dental care may be the prime reason for this. The findings in the present study were in disagreement with a study conducted by **Ahuja A et al (2003)[6]** among the army personnel reported that the mean DMFT was 0.74. This was because of the better awareness in modern age.

A study conducted by **Chandra MK et al (2009)[10]** among bank employees in Bangalore reported that the mean DMFT was found to be 1.30. It was also observed that the caries experience increased with increase in age. Cumulative effect of dental caries with an additional pathological influence of stress, which reduces salivary flow, must have contributed to the observed dental caries scores. Moreover 48.9% of the bank employees due to time constraint were not seeking oral care when the investigation was carried out, the unmet needs like dental caries was more.

A study done by **Zinser VA et al (2008)[8]** among professional truck drivers in Mexico reported that the mean DMFT was 8.95, the prevalence of large cavities increased as the number of cigarettes / day increased from 14.6% to 33.3% .The findings in the present study were in agreement with a study conducted by **Peterson PE(1983)[30]** among Danish Industrial population which concluded that untreated dental caries and missing teeth were predominant among workers than the filled teeth. This is because the workers less frequently visit dentist and decay may be severe requiring extraction of teeth than restoring the teeth.

Tomita NE et al (2005)[31] among building construction workers in Sao Paula, Brazil which showed a mean DMFT of 16.9 and this was attributed due to low level of education and hence they preferred dental extractions as a therapeutic measure owing to dental caries in populations of lower socioeconomic status..

DENTITION STATUS:

It is observed from the present study that 731(85%) drivers had decayed crown, 47(5.5%) drivers had secondary caries, 136(15.8%) drivers had filled crown without any decay, 369(42.9%) drivers had missing teeth due to caries,

316(36.7%) drivers had missing teeth due to other reasons, 27(3.1%) drivers had abutment and 39(4.5%) had trauma. 79(9.2%) had decayed root, 106(12.3%) drivers roots were exposed and 558(64.9%) drivers root were not recorded. 648(75.3%) needed one surface restoration, 209(24.3%) needed two surface restoration,13(1.5%) needs crown, 182(21.2%) needs pulp care and 247(28.7%) needs extraction

The high figures for untreated dental decay and for missing teeth indicate that they less frequently visited dentist, lack of practicing dentist nearby, even if dentists are available the cost of treatment was too high for them to afford, lack of awareness in maintaining oral hygiene.

Root surface caries are mainly seen as a consequence of poor oral hygiene, chronic periodontal disease with gum recession and exposure of the softer more susceptible root surfaces in the oral environment. The decay usually progresses slowly and painlessly and was not noticed by the sufferer because the cavities are usually filled with food debris and located at or below the gingival margin.

This was similar to the study done by **Reddy CS et al (2010)**[3] among Karnataka state road transport drivers and employees in Mysore where 85.7% of the drivers needed extractions, 38.5% drivers needed restorations and 88.8% needed root canal treatment. This was because only 44.65% individuals visited the dentist where the under utilization of dental services was mainly due to lack of time, non availability, and the high cost of treatment.

Dilip CL (2005)[7] among police recruits in Karnataka reported that 71% needed one surface fillings, 24% needed two or more surface fillings and 1.25% needed extractions. The high rate of dental treatment needs might be due to the

poor oral hygiene practices leading to a high prevalence of periodontal disease and dental caries. The unmet and cumulative needs for treatment were due to their lack of awareness, lack of facilities for early diagnosis and prompt treatment including preventive measures, high cost of treatment, hospitals being far away, busy schedule of the recruits leaving little time to care for their health.

PROSTHETIC STATUS AND TREATMENT NEEDS:

The present study showed 369(42.9%) drivers had missing teeth due to caries, 316(36.7%) drivers had missing teeth due to other reasons of which 107(12.4%) drivers required one unit prosthesis, 64(7.4%) drivers required multi unit prosthesis and 26(3.0%) drivers required combination of one and multi unit prosthesis in upper arch, 568(66%) drivers required no prosthesis, 158(18.4%) required one unit prosthesis, 100(11.6%) drivers required multi unit prosthesis, 34(4%) required combination of one and multi unit prosthesis in lower arch. This is due to the lack of visit to dentists, low socioeconomic status, lack of time and lack of awareness about the need to replace their lost teeth timely.

This was in agreement with the study done by **Sohi R et al (2010)**[12] among police personnel in Haryana, where 31.29% of them needed maxillary prosthesis and 40.03% needed mandibular prosthesis. Despite a high prosthetic need, only a small number of subjects possessed some form of dental prosthesis. When more than half of the subjects had felt need for some form of dental treatment but had not received the same, a low presence of prosthesis seems to be obvious.

Another study conducted by **Naveen N et al (2010)**[2] among police personnel in Mysore reported that upper denture was present in 2.2% subjects, 3.4% had lower denture and 0.16% had complete denture. 17.9% needed

prosthesis for upper arch, 24.9% of them needed lower prosthesis and 0.16% required complete denture. This was due to greater unmet needs among this population.

ORAL HEALTH IMPACT PROFILE :

In the present study, oral health impact profile 14 questionnaire (Slade 1997) was used to assess the oral health related quality of life among the government and private drivers. Responses were made on a 5-point scale, coded 0=never, 1=hardly ever, 2=occasionally, 3=fairly often, 4=very often. The method used to calculate the total OHIP score was the additive method or summary score method. In this method, the coded responses were summed up into a score ranging from 0 to 56. A score of 0 indicated no perceived oral health problem and 56 indicated maximum impairment.

The mean OHIP for Government drivers and private drivers were 10.03 and 5.80 respectively. There was statistically significant association between OHIP and DMFT, CPI, LOA, oral mucosal lesions, prosthetic status among the study population.

A study conducted by **Kudo Y et al (2011)**[18] among military population in Japan reported that the mean OHIP 14 scores was 4.6. The magnitude of the correlation between the number of missing teeth with OHIP scores was small ($r=0.22$; $p<0.001$). Mean OHIP scores differed between subjects with and without dentures (8.6 and 4.4; $p < 0.001$)

A study conducted by **Daly B et al (2010)**[16] among homeless people in UK reported that the mean OHIP score was found to be 32.0. There was a slight relationship between the perceived impact OHIP 14 and the clinical condition

(number of sound teeth, DT, FT and root lesions) although only the correlation for missing teeth was significant ($p=0.05$). People with natural teeth and dentures reported significantly more impacts compared with people with natural teeth only ($p<0.05$)

SUMMARY

The present descriptive cross-sectional study was conducted to assess the oral health status and treatment needs of professional bus drivers in Chennai. Before beginning of study ethical clearance was obtained from the Institution Review Board of Ragas Dental College & Hospital and also from the Managing Director, Metropolitan Transport Corporation, Chennai and from the branch managers of concerned bus depots to conduct the study.

The study population comprised of 860 bus drivers in which 660 were from Government Institution (MTC) and 200 were from private establishments. The study population were obtained from 10 bus depots of MTC and 40 private travel agencies. Workers who have worked for more than a year and who were present on the day of examination were examined. Workers with history of any systemic illness were excluded. Data was collected using proforma which consisted of WHO basic oral health assessment form (1997), a pre-tested, questionnaire and oral health impact profile 14 questionnaire. The collected data was subjected to statistical analysis.

The findings of the current study were as follows:

- Of the 860 drivers examined, majority 454(52.8%) drivers completed secondary education.
- The mean age of the study population was 40.25.
- The mean monthly income of the study population was 10822.785.
- Majority of them, 739(85.9%) drivers were in ‘watch out zone’, 61 (7.1%) had a score of ‘good’ 60 (7.0%) had ‘excellent’ score.

- There was significant correlation between sweet score and DMFT (p = 0.000)
- A large percentage of the drivers, 317(36.9%) drivers had not visited dentist before. Of those visited, 251(29.2%) drivers had visited dentist for extraction.
- 524(60.9%) drivers felt stress at work while others din't feel stress at work.
- Majority of them, 680(79.1%) drivers brushed their teeth once daily. Of those who brushed their teeth, 836(97.2%) drivers used a combination of tooth brush and tooth paste, 13 (1.5%)tooth powder and tooth brush, 2(0.2%) tooth paste and finger, 5(0.6%) tooth powder and finger, 3(0.3%) others like neem stick and charcoal.
- 574(66.7%) drivers of the study population had no habit of tobacco usage and alcohol consumption.
- The mean OHIP score of the study population was 7.915. There was statistically significant association between OHIP and DMFT, CPI, LOA, oral mucosal lesions, prosthetic status among the study population.
- On TMJ examination, 35(4.1%) drivers had clicking, 16(1.9%) drivers had tenderness on palpation and 10(1.2%) had restricted jaw movements.
- 78(9.1%) drivers had leukoplakia, 5(0.6%) had ulceration, 7 (0.8%) had candidiasis and 30(3.5%) had other conditions

- 5(0.6%) drivers had demarcated enamel opacities, 3(0.3%) had diffused enamel opacity and 3(0.3%) had hypoplasia.
- 16(1.9%) drivers had questionable dental fluorosis, 11(1.3%) drivers had very mild dental fluorosis
- 471(54.8%) had dental calculus, 107(12.4%) had periodontal pocket depth 6mm or more
- 731(85%) drivers had decayed crown, 47(5.5%) drivers had secondary caries, 136(15.8%) drivers had filled crown without any decay, 369(42.9%) drivers had missing teeth due to caries, 316(36.7%) drivers had missing teeth due to other reasons, 27(3.1%) drivers had abutment and 39(4.5%) had trauma
- 79(9.2%) had decayed root, 106(12.3%) drivers roots were exposed and 558(64.9%) drivers root were not recorded.
- 648(75.3%) needed one surface restoration, 209(24.3%) needed two surface restoration,13(1.5%) needed crown, 182(21.2%) needed pulp care and 247(28.7%) needed extraction
- 22(2.6%) drivers had prosthesis in the upper arch and 22(2.6%) drivers had prosthesis in the lower arch.
- 197(22.9%) drivers needed upper prosthesis and 292(34%) drivers needed lower prosthesis.
- 18 (2.1%) drivers had pain or infection and 860(100%) were referred.

CONCLUSION

Despite great achievements in improving the oral health of populations globally, oral health problems still remain in many communities around the world - particularly among underprivileged groups in developed and developing countries. Dental caries and periodontal diseases have historically been considered the most important global oral health burdens.

Bus drivers represent a special population group or community who deserve to be attended both on their oral and general health due to the various occupational and environmental hazards they encounter in their daily life.

The results of this study provided evidence to understand that the drivers find very little time to relax during their busy work schedule. The cumulative effect of oral diseases like dental caries and periodontal disease was greater. Further this study population has relatively poor attitude towards oral health as evident by majority of them visiting dentists for extraction. Most of the drivers were also consuming sugars as part of their diet. These practices, coupled with stress associated with their profession, increases the disease burden among this community. Hence necessary changes have to be advocated to change their attitude towards oral health, dietary pattern and adopt methods to reduce abnormal stress at work place and provide this vulnerable group a harmonious environment so that the initiation and progression of oral diseases is intercepted at the earliest for the achievement of optimal oral health status.

The following are some of the recommendations which can be adopted to improve the oral health status of the drivers:

1. The management of MTC and private bus operators should consider inclusion of oral health care delivery as part of the general health schemes existing for their employees. The existing schemes like Employer's State Insurance Scheme (ESI) and Group Insurance Schemes should be strengthened to include oral health care which will contribute to the improvement of dental health of professional bus drivers.
2. The management board of MTC and even the private establishments should establish a dental clinic within the premises of the offices of the divisional controllers to deliver comprehensive oral health care to its employees and the dental manpower should also be sought from the local dental colleges.
3. MTC should appoint a trained health educator to educate and improve their attitude and awareness towards dental care and also organize dental health education programmes periodically in the depots.
4. Individually oriented preventive care is required. Oral prophylaxis, use of fluoride mouthrinses and fluoridated dentifrices seem to be most appropriate preventive measures. MTC and the private bus agencies should consider distribution of toothbrushes, fluoridated toothpaste, and mouthrinses at a subsidized rate for the employees.
5. The MTC and the private bus agencies should arrange some destressing programmes like yoga, etc. for the employees.

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Annexure 1 : Permission letters

RAGAS DENTAL COLLEGE & HOSPITAL
(Unit of Ragas Educational Society)
Recognized by the Dental Council of India, New Delhi
Affiliated to The Tamilnadu Dr. M.G.R. Medical University, Chennai
2/102, East Coast Road, Uthandi, Chennai - 600 119. INDIA.
Tele : (044) 24530002, 24530003-06. Principal (Dir) 24530001 Fax : (044) 24530009

To
The Hon'ble Minister for Transport
Govt. of Tamilnadu
Anna Salai
Chennai – 600 002

12.07.2010

Respected Sir,

Sub: Permission to conduct a survey on oral health status and treatment needs of professional bus drivers in Chennai.

---o0o---

I would like to introduce Dr. S. Aparna, the Post Graduate student, in the department of Public Health Dentistry, who is planning a research work on "Oral health status and treatment needs of professional bus drivers in Chennai" as a part of her PG curriculum.

The procedure involves examination and recording of their oral health status using the WHO proforma with the informed consent of the participants.

It will be a useful study if you could permit her to undertake this study at the Metropolitian Transport Corporation under your jurisdiction.

I assure you that she would perform with all sincerity and our continuous support for the successful completion of this proposed research work.

Please find the enclosed research proposal.

Expecting your favourite reply.

Thanking you,

Yours sincerely,

Date: 12.7.2010

RAGAS DENTAL COLLEGE Chennai

(Dr. S. RAMACHANDRAN)
PRINCIPAL
PRINCIPAL
RAGAS DENTAL COLLEGE & HOSPITAL
CHENNAI

மாநகர் போக்குவரத்துக் கழகம் (சென்னை) வரையறுக்கப்பட்டது
ஒரு தமிழ்நாடு அரசு நிறுவனம்
METROPOLITAN TRANSPORT CORPORATION (CHENNAI) LIMITED
AN UNDERTAKING OF THE GOVERNMENT OF TAMILNADU

Lr.No:32110/Admn(2)/IR/MTC/2010 Date:02.08.2010

To

The Principal,
Department of Public Health Dentistry,
Ragas Dental College & Hospital,
Chennai 600 119

Sir,

Sub : MTC (Ch) Ltd - Research Work - Permission - Reg.

Ref : Your Lr.No: Nil Dated 12.07.2010

With reference to your letter cited above, we are pleased to permit Selvi Dr. S. Aparna, to undergo Research Work at our Anna Nagar depot on 23.08.2010 and continue her Research Work in all other MTC Bus Depots in Chennai (One day in each Depot).

Thanking you

Yours faithfully,
for Metropolitan Transport Corporation (Chennai) Limited

Assistant Manager (IR)

REGISTERED OFFICE : PALLAVAN HOUSE, ANNA SALAI, CHENNAI - 600 002.

TELEPHONE : 23455801 (9 LINES)
TELEGRAM : EMTECEBUS
FAX : (091) (044) 23455830
E-Mail : mtc_chennai@vsnl.net
Web : mtcbus.org

METROPOLITAN TRANSPORT CORPORATION (CHENNAI) LIMITED

Lr.No: 32110/Admn(2)/IR/MTC/2010 Date : 02.08.2010

Sub : MTC(Ch) Ltd - Research Work at our Depots - Permission - Reg.

The Branch Managers are requested to permit Selvi Dr. S. Aparna, Student of Ragas Dental College, to undergo Research work at All Depots (one day in each depot)..

Necessary arrangements may please be given..

ASSISTANT MANAGER (IR)

To

The Branch Manager, AND
All Depots.

மாநகர் போக்குவரத்துக் கழகம் (சென்னை) வரையறுக்கப்பட்டது
ஒரு தமிழ்நாடு அரசு நிறுவனம்
METROPOLITAN TRANSPORT CORPORATION (CHENNAI) LIMITED
AN UNDERTAKING OF THE GOVERNMENT OF TAMILNADU

Letter No.01/13704/LW1/MTC/2011-1 Dated: 19.01.2011

To
The Principal,
Ragas Dental College & Hospital,
2/102, East Coast Road,
Uthandi,
Chennai-600 119.

Sir,

Sub: MTC (Chennai) Limited - Welfare - Free Dental Camp on 24.01.2011 at Adyar Depot - Permission extended - Regarding.

Ref: Your letter dated 14.01.2011.

With reference to your letter cited, we are pleased to extend permission to conduct Free Dental Camp for our employees at Adyar Depot on 24.01.2011, between 09.00 A.M. and 02.00 P.M.

The Branch Manager at Adyar Depot may be contacted for necessary assistance and co-ordination.

Yours faithfully,
for Metropolitan Transport Corporation (Chennai) Ltd.,

for General Manager (Operation)

19/01/11

REGISTERED OFFICE : PALLAVAN HOUSE, ANNA SALAI, CHENNAI - 600 002.

TELEPHONE : 23455801 (9 LINES)
TELEGRAM : EMTECEBUS
FAX : (091) (044) 23455830
E-Mail : mtc_chennai@vsnl.net
Web : mtcbus.org

மாநகர் போக்குவரத்துக் கழகம் (சென்னை) வரையறுக்கப்பட்டது

ஒரு தமிழ்நாடு அரசு நிறுவனம்

METROPOLITAN TRANSPORT CORPORATION (CHENNAI) LIMITED

AN UNDERTAKING OF THE GOVERNMENT OF TAMILNADU

Letter No.01/13704/LW1/MTC/2011-1 Dated: 01.03.2011

To
The Principal,
Ragas Dental College & Hospital,
2/102, East Coast Road,
Uthandi,
Chennai-600 119.

Sir,

Sub: MTC (Chennai) Limited - Welfare - Dental Camp - Permission extended - Regarding.

Ref: Your Letter dated 25th February 2011.

We are pleased to extend permission to conduct Free Dental Camp at the following Depots.

08.03.2011 - Tambaram Depot

10.03.2011 - Central Depot

15.03.2011 - Perambur Depot

The Branch Managers of concerned Depots may be contacted for necessary assistance.

Yours faithfully,
for Metropolitan Transport Corporation (Chennai) Ltd.,

MANAGING DIRECTOR

7/3/11 Principal

REGISTERED OFFICE : PALLAVAN HOUSE, ANNA SALAI, CHENNAI - 600 002.

TELEPHONE : 23455801 (9 LINES)
TELEGRAM : EMTECEBUS
FAX : (091) (044) 23455830
E-Mail : mtc_chennai@vsnl.net
Web : mtcbus.org

Annexure II : Consent form

I ..... the undersigned hereby give my full consent for the performance of oral examination on myself as a part of the study being conducted by Dr.S.Aparna, Postgraduate Student, Ragas Dental college, Chennai – 119, on "Oral Health Status and treatment needs of professional bus drivers in Chennai" under the guidance of Dr. P.D.Madankumar MDS, Reader, Dept of Public Health Dentistry, Ragas Dental College & Hospital, Chennai.

I also understand and accept the study protocol and hereby give my full consent to participate in this study voluntarily, unconditionally and freely without any fear or pressure in mentally sound and conscious state.

Participant's signature

Date

..... ஆகிய நான் ராகாஸ் பல் மருத்துவக்கல்லூரி முதுகலை பல் மருத்துவ மாணவி டாக்டர். S.அபர்ணா செயலாற்றும் பேருந்து ஓட்டுநர்களின் வாய் நலம் சார்ந்த இந்த ஆய்வில் எனக்கு வாய் பரிசோதனை மேற்கொள்ள முழு ஒப்புதல் அளிக்கிறேன்.

இந்த ஆய்வு குறித்து எனக்கு தெரிவிக்கப்பட்ட நடைமுறைகளை புரிந்து கொண்டு எந்த தயக்கமோ யாருடைய வற்புறுத்தலோ இன்றி சுயநினைவுடன் முழு மனதுடன் இந்த ஆய்வில் பங்கேற்க ஒப்புதல் அளிக்கிறேன்.

பங்கு பெறுபவர் கையொப்பம் :

தேதி:

Annexure III

LIST OF MTC BUS DEPOTS SELECTED FOR THE STUDY

1. ANNA NAGAR WEST BUS DEPOT
2. ADYAR BUS DEPOT
3. TONDIARPET BUS DEPOT
4. SAIDAPET BUS DEPOT
5. THIRUVANMIYUR BUS DEPOT
6. AVADI BUS DEPOT
7. K.K.NAGAR BUS DEPOT
8. TAMBARAM BUS DEPOT
9. CENTRAL BUS DEPOT
10. PERAMBUR BUS DEPOT

LIST OF PRIVATE BUS AGENCIES SELECTED FOR THE STUDY

1. ABTx Travels	21. Paulo Travels
2. Ajit MGM Travels	22. Poornima Travels
3. Alagappa Travels	23. PR Travels
4. Amarnath Travels	24. Rathi Meena Travels
5. Eline bus service	25. Red bus service
6. Happy JRS Travels	26. RR Travels
7. J.J. Travels	27. Senthil Travels
8. Jahan Travels	28. Shalom career
9. Jeyam Tours & Travels	29. Shri Renganathan Travels
10. Kesineni Tours and Travels	30. SPK Travels
. 11. KPN Travels India ltd.	31. Sree Kannathal Travels
12. Lakshmi Travels	32. Sri Jyothi Travels
13. Mayura Travels	33. Sri Sukra Tours and Travels
14. Mettur super services	34. SRV Travels
15. MGM Travels	35. Sri Bhagyalakshmi Travels
16. MJT Tours & Travels	36. TVLS Travels
17. Muskaan Tours and Travels	37. Universal Travels
18. Nandhan Travels	38. Velmurugan Travels
19. Narayanamoorthy Travels	39. Vivegam Travels
20. National Travels	40. Yohalakshmi Travels

Annexure IV

Questionnaire

DEPARTMENT OF PUBLIC HEALTH DENTISTRY
RAGAS DENTAL COLLEGE AND HOSPITAL
CHENNAI
சமுதாயப் பல் மருத்துவத்துறை
ராகாஸ் பல் மருத்துவலக் கல்லூரி மற்றும் மருத்துவமனை,
சென்னை.

An Assessment of the Oral Health Status and Treatment Needs of Professional Bus Drivers in Chennai

சென்னையிலுள்ள தொழில்முறை பேருந்து ஓட்டுநர்களின் வாய்நலம் மற்றும் சிகிச்சை தேவை பற்றிய ஆய்வு

Serial No : வரிசை எண்: Examination Date : ஆய்வு தேதி:

1. Name : பெயர் :

2. Age : வயது 3. Gender (M/F) : பாலினம் (ஆ/பெ) :

4. Education:
1) No formal education 2) Primary education
3) Secondary education 4) P.U.C. 5) Degree ☐

கல்வித் தகுதி
அ) முறையான கல்வி பயிலாதவர் ஆ) ஆரம்பக் கல்வி
இ) நடுநிலைக் கல்வி ஈ) பி.யு.சி. உ) பட்டப்படிப்பு

5. Working hours per day : ஒருநாளைய வேலை நேரம்

6. Monthly income : மாத வருமானம்

7. Working experience : வேலை அனுபவ ஆண்டு

8. Diet : உணவுப்பழக்கம்: 1)Vegetarian அ) சைவம் 2)Mixed ஆ) கலப்பு உணவு

9. 24 hour Diet Chart/ 24 மணி நேர உணவு அட்டவணை

S.No **வ.எண்**	Time நேரம்	Food / Drink **உணவு/ பானங்கள்**	Added sugar exposure சர்க்கரை அளவு வெளிப்பாடு

10. Do you smoke ? Yes / No

புகை பிடிக்கும் பழக்கம் உள்ளதா? ஆம்/ இல்லை

11. If yes, 1) What do you smoke? ……..
2) How many cigarettes /beedis do you smoke in a day? ……
3) Duration : ……

ஆம் என்றால் (அ) எந்த வகை புகை பிடிப்பீர்கள்?
ஆ) ஒரு நாளில் எத்தனை சிகரெட் / பீடி புகைப்பீர்கள்
இ) பழக்கத்தின் கால அளவு .....

12. Do you have paan / tobacco chewing habit? Yes/No

புகையிலை மெல்லும் பழக்கம் உண்டா? ஆம்/ இல்லை

If yes, 1) Type : ……

2) Quantity : ……

3) Duration : ……..

ஆம் என்றால்

அ) வகை
ஆ) அளவு
இ) கால அளவு

13. Do you consume alcohol? Yes / No
மது அருந்தும் பழக்கம் உள்ளதா? ஆம்/ இல்லை

If yes, 1) Quantity : ……

2) Duration : ……..

ஆம் என்றால்
அ) அளவு
ஆ) கால அளவு

14. Oral Hygiene practices:

வாய் சுகாதார பழக்கங்கள்

I. Type of tooth cleaning

1) Tooth brush + paste 2) Tooth brush + powder 3) Finger + paste

4) Finger + powder 5) Finger 6) Others, specify .....

பல் துலக்கும் முறை

அ) பல் துலக்கி + பற்பசை ஆ) பல் துலக்கி + பற்பொடி

இ) கை விரல் + பற்பசை ஈ) கை விரல் + பற்பொடி

உ) கை விரல் ஊ) வேறு ஏதேனும், குறிப்பிடவும் .....

II. Method of brushing

1) Horizontal 2) Vertical 3) Both 4) Circular 5) Don't know

பல் துலக்கும் முறைகள்

அ) கிடை மட்டமாக ஆ) செங்குத்தாக

இ) இரண்டுமாக ஈ) வட்டமாக உ) தெரியாது

III. Frequency of tooth brushing

1) Once daily 2) Twice daily 3) Thrice or more

ஒரு நாளில் எத்தனை முறை பல் துலக்குவீர்கள்

அ) ஒரு முறை ஆ) இரண்டு முறை இ) முன்று அல்லது அதற்கு மேல்

IV. Duration of tooth brushing

1) 1-2 min 2) 3-5 min 3) > 5 min 4) Not noticed

பல்துலக்க எடுத்துக்கொள்ளும் கால அளவு

அ) 1-2 நிமிடங்கள் ஆ) 3-5 நிமிடங்கள்

இ) 5 நிமிடங்களுக்கு மேல் ஈ) கவனித்தது இல்லை

V. Frequency of changing the tooth brush

1) 1-2 months 2) 3 months 3) 4-6 months 4) 7-12 months

5) Once flared 6) Irregular 7) Not noticed

பல்துலக்கியை எப்போது மாற்றுவீர்கள்

அ) 1-2 மாதத்திற்கு ஒருமுறை ஆ) 3 மாதத்திற்கு ஒருமுறை

இ) 4 -6 மாதத்திற்கு ஒரு முறை ஈ) 7-12 மாதத்திற்கு ஒருமுறை

உ) பாழான பிறகு ஊ) ஒழுங்கற்ற முறை

எ) கவனித்தது இல்லை

VI. Any other dental cleansing aids used, Yes / No

வேறு ஏதேனும் பல் சுத்தப்படுத்தும் கருவி பயன்படுத்துவீர்களா?
ஆம்/இல்லை

15. Have you visited a dentist earlier? Yes / No

இதற்கு முன் பல்மருத்துவரை அணுகியுள்ளீர்களா? ஆம் / இல்லை

16. If yes, what was the reason?

1) Tooth ache 2) Extraction 3) Filling 4) Get teeth cleaned

5) Replacement of teeth 6) Others .....

ஆம் என்றால், என்ன காரணத்திற்காக
அ) பல் வலிக்காக ஆ) பல் எடுப்பதற்காக இ) பல் அடைப்பதற்காக
ஈ) பல் சுத்தம் செய்ய உ) மாற்றுப்பல் வைக்க ஊ) வேறு ஏதேனும் .....

17. If Not, what was the reason?

1) Lack of time 2) Dentist not available nearby 3) High cost of treatment

4) Not interested 5) Others .....

இல்லை என்றால் என்ன காரணம்?
அ) நேரமின்மை ஆ) பல் மருத்துவர் அருகாமையில் இல்லை என்பதனால்
இ) செலவு அதிகமாவதால் ஈ) விருப்பமில்லாததால்
உ) வேறு ஏதேனும் .....

18. Do you have regular daily work shifts? Yes/ No

தங்களுக்கு வழக்கமான தினப்படி வேலை நேரமா? ஆம்/ இல்லை

19. Do you suffer from any work related stress? Yes/ No

நீங்கள் ஏதேனும் வேலை சார்ந்த மன அழுத்தத்தினால் அவதிப்படுகிறீர்களா?
ஆம்/இல்லை.

Annexure V

ORAL HEALTH IMPACT PROFILE
வாய் நல பாதிப்பின் சுய விவரம்

Name: Date:
பெயர் : தேதி:

How often have you had the problem during the last year
(circle your answer)

கடந்த ஒரு வருடத்தில் கீழே குறிப்பிடப்பட்டுள்ள பிரச்சனைகள் தங்களுக்கு எந்த அளவில் இருந்தது? (தங்களது விடையை வட்டமிடவும்)

1.	Have you had trouble pronouncing any words because of problems with your teeth, mouth or dentures? தங்களுடைய பற்கள், வாய் அல்லது மாற்றுப் பற்களின் பிரச்சனைகளினால் தாங்கள் உச்சரிக்கும் வார்த்தைகளில் ஏதேனும் சிரமம் இருந்துள்ளதா?	Very often எப்போதும்	Fairly often சுமாராக	Occasionally எப்போதாவது	Hardly ever அபூர்வமாக	Never இல்லை	Don't Know தெரியாது
2.	Have you felt that your sence of taste has worsened because of problems with your teeth, moth or dentures? தங்களுடைய பற்கள், வாய் அல்லது மாற்றுப் பற்களின் பிரச்சனைகளினால் தங்களது உணவு சுவையின் தன்மை மோசமடைந்ததாக உணர்ந்துள்ளீர்களா?	Very often எப்போதும்	Fairly often சுமாராக	Occasionally எப்போதாவது	Hardly ever அபூர்வமாக	Never இல்லை	Don't Know தெரியாது
3.	Have you had painful aching in your mouth? தங்களின் வாயில் கடினமான வலி ஏற்பட்டுள்ளதா?	Very often எப்போதும்	Fairly often சுமாராக	Occasionally எப்போதாவது	Hardly ever அபூர்வமாக	Never இல்லை	Don't Know தெரியாது

4.	Have you found it uncomfortable to eat any foods because of problems with your teeth, mouth or dentures? தங்களுடைய பற்கள், வாய் அல்லது மாற்றுப் பற்களின் பிரச்சனைகளினால் தாங்கள் ஏதேனும் உணவு உண்ண சிரமமாக இருந்துள்ளதா?	Very often எப்போதும்	Fairly often சுமாராக	Occasionally எப்போதாவது	Hardly ever அபூர்வமாக	Never இல்லை	Don't Know தெரியாது
5.	Have you been self conscious because of your teeth, mouth or dentures? தங்களுடைய பற்கள், வாய் அல்லது மாற்றுப் பற்களினால் பிறர் பார்ப்பார்கள் என்று தன்னடக்கமாக இருந்துள்ளீர்களா?	Very often எப்போதும்	Fairly often சுமாராக	Occasionally எப்போதாவது	Hardly ever அபூர்வமாக	Never இல்லை	Don't Know தெரியாது
6.	Have you felt tense because of problems with your teeth, mouth or dentures? தங்களுடைய பற்கள், வாய் அல்லது மாற்றுப் பற்களின் பிரச்சனைகளினால் மன அழுத்தம்/ கோபத்திற்கு உள்ளாகியுள்ளீர்களா?	Very often எப்போதும்	Fairly often சுமாராக	Occasionally எப்போதாவது	Hardly ever அபூர்வமாக	Never இல்லை	Don't Know தெரியாது
7.	Has your diet been unsatisfactory because of problems with your teeth, mouth or dentures? தங்களுடைய பற்கள், வாய் அல்லது மாற்றுப் பற்களின் பிரச்சனைகளினால் தாங்கள் உண்ணும் உணவு திருப்தியின்மையானதாக இருந்துள்ளதா?	Very often எப்போதும்	Fairly often சுமாராக	Occasionally எப்போதாவது	Hardly ever அபூர்வமாக	Never இல்லை	Don't Know தெரியாது

8.	Have you had to interrupt meals because of problems with your teeth, mouth or dentures? தங்களுடைய பற்கள், வாய் அல்லது மாற்றுப் பற்களின் பிரச்சனைகளினால் தாங்கள் உணவு உண்ணும்போது தடை ஏதும் ஏற்பட்டுள்ளதா?	Very often எப்போதும்	Fairly often சுமாராக	Occasionally எப்போதாவது	Hardly ever அபூர்வமாக	Never இல்லை	Don't Know தெரியாது
9.	Have you found it difficult to relax because of problems with your teeth, mouth or dentures? தங்களுடைய பற்கள், வாய் அல்லது மாற்றுப் பற்களின் பிரச்சனைகளினால் தாங்கள் ஓய்வெடுக்க சிரமமாக இருந்துள்ளதா?	Very often எப்போதும்	Fairly often சுமாராக	Occasionally எப்போதாவது	Hardly ever அபூர்வமாக	Never இல்லை	Don't Know தெரியாது
10.	Have you been a bit embarrassed because of problems with your teeth, mouth or dentures? தங்களுடைய பற்கள், வாய் அல்லது மாற்றுப் பற்களின் பிரச்சனைகளினால் தாங்கள் சிறிது தர்மசங்கட நிலையாக கருதியுள்ளீர்களா?	Very often எப்போதும்	Fairly often சுமாராக	Occasionally எப்போதாவது	Hardly ever அபூர்வமாக	Never இல்லை	Don't Know தெரியாது
11.	Have you been a bit irritable with other people because of problems with your teeth, mouth or dentures? தங்களுடைய பற்கள், வாய் அல்லது மாற்றுப் பற்களின் பிரச்சனைகளினால் தாங்கள் பிறர் மீது எரிச்சல் அடைந்துள்ளீர்களா?	Very often எப்போதும்	Fairly often சுமாராக	Occasionally எப்போதாவது	Hardly ever அபூர்வமாக	Never இல்லை	Don't Know தெரியாது

12.	Have you had difficulty doing your usual jobs because of problems with your teeth, mouth or dentures? தங்களுடைய பற்கள், வாய் அல்லது மாற்றுப் பற்களின் பிரச்சனைகளினால் தங்களது வழக்கமான வேலைகளை செய்வதற்கு சிரமமாக இருந்துள்ளதா?	Very often எப்போதும்	Fairly often சுமாராக	Occasionally எப்போதாவது	Hardly ever அபூர்வமாக	Never இல்லை	Don't Know தெரியாது
13.	Have you felt that life in general was less satisfying because of problems with your teeth, mouth or dentures? தங்களுடைய பற்கள், வாய் அல்லது மாற்றுப் பற்களின் பிரச்சனைகளினால் தங்களது பொது வாழ்க்கை குறைந்த திருப்தி அளிப்பதாக உணர்ந்துள்ளீர்களா?	Very often எப்போதும்	Fairly often சுமாராக	Occasionally எப்போதாவது	Hardly ever அபூர்வமாக	Never இல்லை	Don't Know தெரியாது
14.	Have you been totally unable to function because of problems with your teeth, mouth or dentures? தங்களுடைய பற்கள், வாய் அல்லது மாற்றுப் பற்களின் பிரச்சனைகளினால் தங்களால் முழுமையாக இயங்க முடியவில்லையா?	Very often எப்போதும்	Fairly often சுமாராக	Occasionally எப்போதாவது	Hardly ever அபூர்வமாக	Never இல்லை	Don't Know தெரியாது

Annexure VI

WHO Oral Health Assessment Form

WHO ORAL HEALTH ASSESSMENT FORM (1997)

Leave Blank | Year Month | Day | Identification number | Examiner | Original/Duplicate

(1) (4)(5) (8)(9) (10) (11) (14) (15) (16)

GENERAL INFORMATION

Name .....

Year month

Date of Birth (17) (20) Occupation (25)

Geographical Location (26) (27)

Location Type (23)

Age in Years (21) (22)

Sex (M=1, F=2) (23)

Ethnic Group (24)

OTHER DATA

..... (29)

..... (30)

CONTRAINDICATION TO EXAMINATION

Reason (31)

CLINICAL ASSESSMENT

1. **EXTRA ORAL EXAMINATION** (32)
2. **T M J ASSESSMENTS** SYMPTOMS (33)

SIGNS Clicking (34) Tenderness (35) Reduced jaw mobility (36)

3. **ORAL MUCOSA** (37) (40) (38) (41) (39) (42)

Condition - Location

4. **ENAMEL OPACITIES/HYPOPLASIA** (43) 14 13 12 11 21 22 23 24 (50)

(51) 46 36 (52)

5. **DENTAL FLUOROSIS** (53)

6. **CPI**

17/16 11 26/27

(54) (56)

(57) (59)

47/46 31 36/37

LOSS OF ATTACHMENT

17/16 11 26/27

(60) (62)

(63) (65)

47/46 31 36/37

7. **DENTITION STATUS AND TREATMENT NEED**

		18	17	16	55 15	54 14	53 13	52 12	51 11	61 21	62 22	63 23	64 24	65 25	26	27	28	
Crown	(66)																	(81)
Root	(82)																	(97)
Treatment	(98)																	(113)

		48	47	46	85 45	84 44	83 43	82 42	81 41	71 31	72 32	73 33	74 34	75 35	36	37	38	
Crown	(114)																	(129)
Root	(130)																	(145)
Treatment	(146)																	(161)

8. **PROSTHETIC STATUS**

Upper Lower

(162) (163)

PROSTHETIC NEED

Upper Lower

(164) (165)

9. **DENTOFACIAL ANOMALIES**

DENTITION Missing (166) (167)

SPACE Crowding (168) Spacing (169) Diastema (170) Max. Irreg (171) Mand.Irreg. (172)

OCCULSION Max. Overjet (173) Mand. Overjet (174) Open bite (175) Molar relation (176)

10. **NEED FOR IMMEDIATE CARE AND REFERRAL**

Life - Threatening Condition (177) Pain or Infection (178)

Other Condition (Specify) (179) Referral (180)

Annexure VII – Letters of appreciation

மாநகர் போக்குவரத்துக் கழகம் (சென்னை) வரையறுக்கப்பட்டது
ஒரு தமிழ்நாடு அரசு நிறுவனம்
METROPOLITAN TRANSPORT CORPORATION (CHENNAI) LIMITED
AN UNDERTAKING OF THE GOVERNMENT OF TAMILNADU

16-05-2011.

To

The Principal,

Ragas Dental College and Hospital,

Uthandi,

Chennai - 600 119.

Sir ,

This is to bring to your kind notice that Dr.S.Aparna doing post graduation in the department of Public Health Dentistry in your Institution examined the bus drivers employed in about ten bus depots of Metropolitan transport corporation, Chennai for her research work on ORAL HEALTH STATUS AND TREATMENT NEEDS OF PROFESSIONAL BUS DRIVERS IN CHENNAI. She did free dental check up followed by basic dental treatments which were delivered at the camp site at free of cost and were referred to your institute for further treatment. She also gave preventive suggestions with respect to dental health.

Thanking you,

16/5/11

Yours sincerely,

Medical Officer,
M.T.C. H. Qrs Dispensar
Madras-600 002.

REGISTERED OFFICE : PALLAVAN HOUSE, ANNA SALAI, CHENNAI - 600 002.

TELEPHONE : 23455801 (9 LINES)
TELEGRAM : EMTECEBUS
FAX : (091) (044) 23455830
E-Mail : mtc_chennai@vsnl.net
Web : mtcbus.org

J.R.S.
TRAVELS

P. Allah Baksh

Date .....

31st March 2011

To

The Principal,

Ragas Dental College and Hospital,

Uthandi,

Chennai - 600 119.

Sir ,

This is to certify that Dr.S.Aparna doing post graduation in the department of Public Health Dentistry in your Institution conducted a research on ORAL HEALTH STATUS AND TREATMENT NEEDS OF PROFESSIONAL BUS DRIVERS IN CHENNAI for all the bus drivers working in our travel agency. She did free dental check up and and also gave preventive suggestions with respect to dental health. A proposal for the free dental treatment camp was charted in consultation with us.

Thanking you,

Yours sincerely,

KOYAMBEDU : Shop No. 19, Omni Bus Terminus, Koyambedu, Chennai-600 107. ☎ : 2479 7310, 2479 7410
EGMORE : No. 6/A, Gandhi Irwin Road, (Hotel Imperial Complex Inside) Egmore, Chennai-8. ☎ : 2819 2809, 2819 2810

"SHALOM" CAREER

Tourist Bus Operators

7, Annai Sathya Nagar, Anderson Salai, Chennai : 600 023. Ph : [struck out] 24964665.

பெறுநர் :-

உயர்திரு முதல்வர் அவர்கள்,
ராகாஸ் பல் மருத்துவக் கல்லூரி,
உத்தண்டி,
சென்னை - 600 119.

ஐயா,

தங்கள் கல்லூரியில் முதுகலை பட்டப்படிப்பு பயிலும் Dr. அபர்ணா அவர்கள் எங்களது நிறுவன குழுமங்களுக்கு வந்து இங்கு பணிபுரியும் [illegible] இருந்து ஓட்டுனர்களுக்கு வாய் சுகாதார நிலை மற்றும் அவர்களுக்கு தேவையான பல் சிகிச்சை பற்றிய ஆராய்ச்சியை நடத்தினார். இங்கு அவர் இலவசமாக பரிசோதனை செய்து, வாய் நோய் தடுப்பு முறைகளையும் பற்றி சரியாக எடுத்துரைத்தார். இவரது ஆராய்ச்சி எங்களது தொழிலாளர்களுக்கு பயனுள்ளதாக இருந்தது. மேலும் இவர் பல் சிகிச்சை மருத்துவ முகாம் நடத்துவதாகவும் உறுதியளித்தார்.

— நன்றி —

இப்படிக்கு,

For SHALOM CAREER

[signature]

Proprietor.

JJ TRAVELS

Phone : 24792890

(Tourist Car,Van & Bus Operators)

Office : # 69,Chennai, Omni Bus Terminus,Koyambedu,Chennai – 107

31st March 2011

To

The Principal,

Ragas Dental College and Hospital,

Uthandi,

Chennai - 600 119.

Sir ,

This is to certify that Dr.S.Aparna doing post graduation in the department of Public Health Dentistry in your Institution conducted a research on ORAL HEALTH STATUS AND TREATMENT NEEDS OF PROFESSIONAL BUS DRIVERS IN CHENNAI for all the bus drivers working in our travel agency. She did free dental check up and and also gave preventive suggestions with respect to dental health. A proposal for the free dental treatment camp was charted in consultation with us.

Thanking you,

Yours sincerely,