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Original Research Article

Self-perceived oral health among Karnataka state road transport corporation bus drivers and employees in Davanagere city: a cross-sectional survey

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ABSTRACT

Background: The health of road public transportation workers is a country's health concern. Very few studies have been done to address this issue hence a study was planned to assess the self- perceived oral health among Karnataka State Road Transport Corporation (KSRTC) bus drivers and employees in Davanagere city.
Methods: A cross-sectional questionnaire study was conducted involving 300 employees (KSRTC Bus drivers, conductors and mechanical workers) of Davanagere city between June to August 2024. Data was collected using WHO Basic Oral health survey self-perceived oral health questionnaire for adults. IBM SPSS Statistics version 19 was used for statistical analysis. Responses of participants were expressed in percentages.
Results: Majority of study population were males (96.7%) with an average age of 42.18±6.64 years. The majority (44%) worked as both drivers and conductors. Majority (55%) perceived their oral heath as average, followed by good oral health (27%) and poor oral health (13%). The majority (64%) never received dental care in the past year and 15 % of them visited a dentist due to pain associated with teeth/gums. Around 3% smoked beedi/cigarette occasionally and 1% daily. Around 22% occasionally consumed smokeless tobacco and 12% daily. Around 1-5% had trouble in speech, dry mouth, stained teeth, avoided smiling, had sleep interruption, had remained absent at work, had trouble in doing daily activities, reduced social activity because of oral problems.
Conclusions: Majority of Karnataka Road Transport Corporation Bus drivers and employees in Davanagere city reported of having average oral health and few reported of having poor oral health.

Keywords: Bus drivers, Conductors, KSRTC, Oral health, Self-perceived

INTRODUCTION

Occupation has been one of the most relevant factors that cause a lot of social disparity related to oral health.[1] Blue collared workers such as auto, bus and lorry drivers have a very haphazard and incompatible schedule of their own as they have to keep adapting to the different changes in the itinerary at work, based on their shifts and certain unforeseen situations, while on the wheels for most of the time.[2] As a result of their inability to set aside a specified amount of time for oral health, they are one of the most neglected groups in the community. Due to the ongoing stress at work and in an effort to operate throughout their lengthy workdays, people frequently turn to habits like smoking or smokeless tobacco, which not only negatively impacts oral health but also is one of the leading causes of potentially fatal oral cancer.[3] Additionally brought on by such sedentary and demanding work, overeating, both in terms of quantity and quality of food consumed, results in the increase of health problems.[4] Studies in the past have

shown that the drivers are at an increased risk of developing several systemic diseases and this may be invariably due to the air pollution during working hours or due to other risk factors, primarily related to tobacco habit and alcohol consumption.[5]

India's passenger transport for small and medium distances is bus oriented. Transit workers have huge responsibility to overcome traffic congestion and to get passengers safely and comfortably in scheduled time to the desired destination. The challenge is even more in a metropolitan city with its immensely crowded population.[6] Number of studies have also shown an association between the occurrence of acute necrotizing ulcerative gingivitis and negative life events and stress arising from life situation. Stress among transit workers leads to various form of substance abuse, among which tobacco is most commonly used.[7] It is widely believed that tobacco use among bus drivers and other staffs is very high, the staffs working in transportation are mostly school dropouts and they gets involve in these deleterious habits early in their life. Almost significant effects of tobacco on the oral cavity are: oral cancers and potentially malignant lesions, increased severity and extent of periodontal disease, as well as poor wound healing.[8]

Few Studies done in South India have highlighted the oral health status and treatment needs among such population but there is less evidence related to oral heath programme planning towards the same.[9-12] Hence a study was planned to assess the self-perceived oral health among Karnataka State Road Transport Corporation (KSRTC) bus drivers and employees in Davanagere city to understand their oral health needs and to plan health promotional programs for this population.

METHODS

The objective of the study was to assess the self-perceived oral health among Karnataka state road transport corporation (KSRTC) bus drivers, conductors and mechanical staff employees of two depots in Davanagere city using WHO Basic Oral health survey self-perceived oral health questionnaire for adults. Study design was descriptive, cross sectional questionnaire survey. Data was collected from bus drivers, conductors and mechanical staff employees at KSRTC Bus depots in Davanagere city near their workplace (Bus Depots). Duration of study was from June 2024 to August 2024. The sample for survey was calculated using online sample size calculator from Survey Monkey. Sample size was scientifically calculated using the formula $n=[z^2p(1-p)/e^2]/1+[(z^2p(1-p)/e^2N)]$. Where, N=population size = 1100, e = Margin of error = 0.05, Z = z-score at 95% confidence level =1.96. Substituting the values in the formula, the estimated sample size was 285, which was approximated to 300. Around 300 employees (KSRTC Bus drivers, conductors and mechanical workers) were randomly selected from the list of registered employees at KSRTC Davanagere Division. From each KSRTC Bus depot, 150 employees will be randomly selected from the strata of Bus drivers (n= 160), Conductors (n=80) and Mechanical workers (n=60). Eligibility criteria: Bus drivers, conductors and mechanical staff employees registered at KSRTC Davanagere Division working at 2 depots in Davanagere were included in the study. Administrative staff, Management staff and cleaners working at Bus depots at KSRTC Davanagere division were excluded.

Method of collection of data

Ethical approval was obtained from the Institutional Review Board of Bapuji Dental College and Hospital, Davangere. (Ref No:ECR/1652/Inst/KA/2023/24-04/08-005 dated 12-04-2024).

Voluntary informed consent was obtained from the study participants after explaining them about the purpose of conducting the study and procedure of collecting the data through participant information letter. WHO standardized questionnaire for assessment of self-perceived oral health for adults was used to collect data which was translated to local language and used in a previous study done by Veeresh et al.[13,14] The Questionnaire consisted of 16 questions. Questions 1,2 and 16 in the proforma was used to record demographic details and questions 3-15 was used to record data related to perceived oral health. The questionnaire was investigator administered. Twenty minutes time was taken by the investigator to read out the questions to each participant in the language understandable by them and record their responses on the questionnaire sheet. Investigator educated the participants regarding harmful effects of tobacco and handed over referral cards to participants to avail oral health services at Bapuji Dental College and Hospital, Davanagere.

Statistical analyses

The data obtained was compiled systematically in Microsoft Excel sheet and subjected to statistical analyses using Statistical package for social sciences software version 20. The significance level was fixed at $p<0.05$. Descriptive statistics of the responses was generated in terms of frequencies and percentages.

RESULTS

Majority of study population were males (96.7%). The average age of the participants was 42.18±6.64 years. The majority (48%) had 11-20 years of work experience and 45 % had 1-10 years and very few (6.6%) had more than 20 years of experience. All participants belonged to upper middle class based on modified Kuppuswamy scale of socio-economic classification (2023). Majority (76%) worked at main city depot and 24% worked at peripheral city depot. The majority (44%) worked as both drivers and conductors, followed by 11% conductors, 30% drivers and 15% mechanical workers. Many (74%) were

educated up to a higher secondary level followed by higher primary (25%) and primary level (1%) (Table 1).

Table 1: Demographic details of the study population.

Socio-demographic factors	Number of subjects (%)
Gender	
Male	290 (96.7)
Female	10 (3.3)
Age (years)	
25-34	31 (10.33)
35-44	164 (54.66)
45-54	93 (31.01)
55-64	12 (4)
Mean age (years)	42.18±6.64
Years of service (years)	
1-10	135 (45.01)
11-20	145 (48.33)
20-30	20 (6.66)
Mean years of service	12.08±5.09
Socio-economic status	
Upper middle class	300 (100)
Site of work	
Main city depot	228 (76)
Peripheral city depot	72 (24)
Work type	
Bus drivers	89 (29.7)
Conductors	34 (11.3)
Dual work (both driver and conductor)	132 (44)
Mechanics	45 (15)
Educational level	
Primary	3 (0.9)
Higher primary	74 (24.7)
Higher secondary	223 (74.3)

All the participants reported having more than 20 teeth. Around 76% reported discomfort in teeth/oral cavity in the last 1 year. None of them reported having prosthesis. Majority (55%) reported of having average oral health followed by good oral health (27%) and poor oral health (13%) (Table 2).

Around 87% reported brushing their teeth at least once daily. All participants used toothbrushes and paste. The majority (87%) reported using fluoridated toothpaste. The majority (64%) never received dental care in the past year. Around 15% of them visited a dentist in the past one year due to pain associated with teeth/gums. Around 3% smoked beedi/cigarette occasionally and 1% daily. Around 22% occasionally consumed smokeless tobacco and 12% daily. Around 78% of them consume alcohol occasionally (Table 2).

About 1-5% trouble had in speech, dry mouth, stained teeth, avoided smiling, had sleep interruption, had remained absent at work, had trouble in doing daily activities, reduced social activity because of oral problems. About 71% of them had trouble chewing food and 41% had trouble in biting food in past 1 year (Table 3).

Table 2: Responses to questions related to oral health.

Items and responses	Number of subjects (%)
Number of natural teeth present	
20 teeth and more	300 (100)
Discomfort in the teeth and mouth in last 12 months	
Yes	228 (76)
No	72 (24)
Removable dentures	
No	300 (100)
Self-perceived state of teeth	
Good/very good	73 (24.3)
Average	166 (55.3)
Poor/very poor	61 (20.3)
Self-perceived state of gums	
Good/very good	81 (27)
Average	179 (59.7)
Poor/very poor	40 (13.3)
Frequency of cleaning teeth	
Once daily	261 (87)
Twice daily	39 (13)
Type of teeth cleaning aid used	
Toothbrush and toothpaste	300 (100)
Use of fluoridated tooth paste	
Yes	262 (87.3)
No	35 (11.7)
Don't know	3 (1)
Previous dental visit	
In less than 1 year	8 (2.7)
More than a year	100 (33.3)
Never received dental care	192 (64)
Reason for last dental visit	
Never visited	192 (64)
Pain in teeth/gums/mouth	45 (15)
Dental treatment	57 (19)
Routine check up	6 (2)
Type of tobacco used	
Cigarettes	
Never	288 (96.1)
Occasionally	9 (2.9)
Daily	3 (1)
Smokeless tobacco	
Never	199 (66.3)
Occasionally	66 (22.1)
Daily	34 (11.7)
Frequency of alcohol consumption/day in the last 1 month	
Never	66 (22)
Less than one drink	169 (56.3)
More than one drink	65 (21.7)

Responses related to dietary habits showed that the majority (>90%) ate fresh fruits and consumed biscuits frequently. Nearly half (44%) of them ate buns frequently. Almost 77% of them had tea with sugar daily. And 13% had coffee with sugar. Few (<10%) ate sweets and consumed soft drinks frequently (Table 4).

Table 3: Responses to questions related to oral problems during past 1 year.

Items and responses	Experienced, N (%)	Not experienced, N (%)
Difficulty in biting foods	122 (40.7)	178 (59.3)
Difficulty in chewing foods	213 (71)	87 (29)
Difficulty in speech	3 (1)	297 (99)
Dry mouth	14 (4.7)	286 (95.3)
Embarrassment due to appearance of teeth	11 (3.7)	289 (96.3)
Tense because of teeth/oral problems	30 (10)	270 (90)
Avoided smiling	11 (3.7)	289 (96.3)
Sleep interruption because of oral problems	7 (3.3)	293 (97.7)
Work absenteeism because of oral problems	1 (0.3)	299 (99.7)
Difficulty in daily activities because of oral problems	7 (3.3)	293 (97.7)
Less tolerant towards spouse because of oral problems	0 (0)	300 (100)
Reduced social activities because of oral problems	5 (1.7)	295 (98.3)

Table 4: Responses to questions related to dietary habits.

Items and responses	Consume frequently, N (%)	Seldom/ never, N (%)
Fresh fruits	299 (99.7)	1 (0.3)
Biscuits/cake	274 (91.3)	26 (8.7)
Sweet pies and buns	131 (43.7)	169 (56.3)
Jam/honey	5 (1.7)	295 (98.3)
Chewing containing sugar	20 (6.7)	280 (93.3)
Sweets	24 (8)	276 (92)
Lemonade/soft drinks	5 (1.7)	295 (98.3)
Tea with sugar	230 (76.7)	70 (23.3)
Coffee with sugar	39 (13)	261 (87)

DISCUSSION

The present study was done to assess the self-perceived oral health status of KSRTC bus drivers, conductors and mechanical workers in Davanagere city and it was observed that the majority of KSRTC workers perceived their oral health as average. Similar studies were done to assess the oral health status and treatment needs of bus drivers in Mysore city, Chennai, Nellore, Bangalore, and Chandigarh.[9-15]

In the present study, majority were male workers and mean age of the participants was around 42 years. Similar results were seen in studies done by Gambhir et al, Chowdary et al, and Ahmed et al.[15,3,11] Majority of participants belonged to upper middle class as seen in study by Ahmed et al.[11] However in studies by Gambhir et al, and Shah et al, majority belonged to lower middle class. Many completed high school level of education as observed in few studies.[15,16]

When the participants were enquired about oral hygiene practices, majority reported that they brushed their teeth once daily and few reported twice daily. Similar results were observed in studies by Gambhir et al, and Ahmed et al.[15,11] Majority used toothbrush and paste similar to other studies.[10-11] Majority never visited a dentist. Similar result was seen in studies done by Ahmed et al, and Shah et al.[11,16] The reasons stated in these studies were long working schedules and low priority given to oral problems. when enquired about prosthetic placements, none of the participants reported of having dental prosthesis. However, in the study done by Sukumaran et al, 3% reported of having dental prosthesis.[10]

In the present study, 3% smoked cigarettes/beedis and 34% used smokeless form of tobacco. Similar result was observed in study done by Chowdary et al.[3] However, in the study done by Gambhir et al, Sukumaran et al and Ahmed et al almost 20-25% smoked cigarette/ Beedi.[10,11,15] In a study by Mishra et al, 42% used smokeless tobacco.[17] Smoking is more prevalent among drivers because they use tobacco while driving to eliminate boredom, occupation stress relief and sleepiness.[18] The prevalence of tobacco use among drivers is twice as com-pared to non-drivers.[19] Chewable tobacco is the most used form.[19]According to Hammond et al, 2006 the knowledge of the participants regarding the constituents of tobacco smoke was found to be very low. The bus drivers who smoke always keep their daily income aside for smoking. Tobacco use was more among long distance drivers rather than short distance drivers.[20,21] Majority of the drivers do not know about the harmful effects of tobacco consumption.[22]

In the present study majority of participants perceived their oral health to be good/fair and only 13% perceived it to be poor. The results of the present study could not be compared with other studies as none of the studies tried to

explore the self-perceived oral health. However, few studies have tried to explore the oral health status and prevalence of dental problems among bus drivers. Based on the study done by Sukumaran et al, the mean DMFT among bus drivers of Chennai was 5.53 and 5.5% had calculus and 12% had periodontitis.[10] In a study done by Ahmed et al, where prevalence of oral health problems were assessed among the Nellore city bus drivers, 61% had fair oral hygiene with mean DMFT of 3.23 and 79% had periodontitis and 5% had oral mucosal lesions.[11] In a study by Shah et al, prevalence of dental caries, periodontal disease, leukoplakia and oral submucous fibrosis was 83%, 68%, 8% and 3% and body mass index and oral health status was inversely associated among bus drivers of Belgaum city.[16]

The present study had few limitations, since the sample size was small, the study results could be best generalized to study population. The cross-sectional nature of the study does not permit us to check for causality. Hence, longitudinal studies are recommended. Response bias like social desirability bias cannot be ignored in the study. Study did not assess the prevalence of oral health problems and try to correlate it with self-reported oral health. Further longitudinal studies addressing these limitations could provide better insights in planning and delivering effective oral health services to this population.

CONCLUSION

Majority of Karnataka Road Transport Corporation Bus drivers and employees in Davanagere city reported of having average oral health and few reported of having poor oral health.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Review Board of Bapuji Dental College and Hospital, Davangere. (Ref No: ECR/1652/Inst/KA/2023/24-04/08-005 dated 12-04-2024)

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