Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: www.saspublishers.com

OPEN ACCESS

Community Medicine

Overweight and Obesity among Bus Drivers and Conductors in Karaikal, Puducherry: A Cross Sectional Study

K. Mohamed Ali[1], S.Sangeetha[2], K. Mujibur Rahman[3], Gulrukh Hashmi[4*], S Sathishkumar[5], M. Madan Mohan[6]

[1]Professor, Department of Community Medicine, Vinayaka Missions Medical College, Karaikal, Puducherry 609609, India
[2]Professor and Head, VMKVMC, Department of Community Medicine, Vinayaka Missions Medical College, Karaikal, Puducherry 609609, India
[3]Professor and Head,VMMC & H, Department of Community Medicine, Vinayaka Missions Medical College, Karaikal, Puducherry 609609, India
[4]Assistant Professor, Department of Community Medicine, Vinayaka Missions Medical College, Karaikal, Puducherry 609609, India
[5]Statistician cum Lecturer, Department of Community Medicine, Vinayaka Missions Medical College, Karaikal, Puducherry 609609, India
[6]Chief Librarian,VMMC & H, Department of Community Medicine, Vinayaka Missions Medical College, Karaikal, Puducherry 609609, India

***Corresponding author:** Gulrukh Hashmi
| **Received:** 11.03.2019 | **Accepted:** 24.03.2019 | **Published:** 30.03.2019
DOI: 10.36347/sjams.2019.v07i03.072

Abstract | **Original Research Article**

Introduction: According to NHFS-4, the number of obese people in India has doubled. Obesity is a major risk factor associated with hypertensions, diabetes mellitus type 2 and other cardiovascular diseases. Work related variables as well as environmental influences may increase the risk of obesity among bus drivers and conductors. ***Objectives:*** To estimate the prevalence overweight and obesity among male bus drivers and bus conductors in Karaikal, Puducherry. ***Methodology:*** This was a cross sectional descriptive study carried out among bus drivers and conductors working at Karaikal, Puducherry. Data was collected using structured questionnaire by interview method. Height, weight was measured. Body Mass Index (BMI) was calculated. Overweight and obesity was classified based on the WHO Asia Pacific guidelines. Data was analysed using chi square test and p value of <0.05 was considered significant. ***Results:*** The prevalence of obesity in our study was 16% and pre obese was 63.26% whereas 7.73% were overweight. Prevalence of overweight and obesity among male bus drivers was found to be high.
Keywords: Bus Drivers, Conductors, Overweight, Obesity.

INTRODUCTION

An alarming situation has developed in India with regards to overweight and obesity. The prevalence of obesity in India has doubled in last 10 years according to National Family Health Survey Report 2016. The rise in overweight and obesity has been seen not only in urban areas but also in rural areas. One in three adults (both men and women) is overweight/obese in at least five states and union territories, viz., Puducherry, Andaman & Nicobar Islands, Sikkim, Andhra Pradesh and Goa. Puducherry is the second leading state in the number of obese males i.e. 37.1% and leading in case of obese females i.e. 36.7% [1].

On one hand, obesity contributes to the out of pocket expenditure and increase in absence from work and on the other hand, obesity itself develops due to occupational stress, environmental and lifestyle factors associated with occupation [2].

A number of studies carried out in America and Australia have reported the prevalence of obesity to be high among transport workers [3, 4]. Transport workers especially bus drivers are at higher risk of developing obesity due to the lack of good quality food, long work hours and occupational stress [5]. However in India very few studies have been carried out in this occupational group with special focus on obesity.

By 2030, it is projected that prevalence of overweight and obesity will increase by 44% and 45% respectively [6]. Thus, it becomes imperative to conduct more research to examine the relationship between obesity, occupation and interventions among workers employed in occupational groups with high or increasing rates of obesity [3]. Hence this study was conducted to find out the prevalence of overweight and obesity among bus drivers and conductors at Karaikal, Puducherry.

METHODOLOGY

This is a descriptive cross-sectional study conducted among male bus drivers and conductors at the Corporation bus stand of Karaikal from July 2018 to December 2018. It is the main bus stand where buses of SETC, PRTC and Private transport start and end at.

This study was conducted as a part of a larger study. For this study, a sample size of 362 was calculated based on the prevalence of obesity of 56% from previous study, 95% confidence limit, 15% relative precision and 20 % attrition rate. Simple random sampling was used to include the bus drivers and conductors in the study.

After the institutional ethics committee clearance was obtained, permissions from depot managers and private transport managers were obtained. After taking informed consent, data was collected using structured questionnaire by interview method. Sociodemographic details, working patterns including years of driving, timing and conditions of work and personal habits was noted.

Weight was measured to the nearest 0.1 kg using a beam type weighing scale without any footwear. Height was measured to nearest 0.1cm on a vertical surface with height scale marked in centimetres without footwear, occiput, buttocks and back foot touching the wall and study participant looking straight and forward. BMI was calculated using formula weight in kg/ (height in m)^2 and expressed as kg/m^2.

All those having BMI from 23-24.9 kg/m^2 were classified as overweight and BMI of 25- 29.9 kg/m^2 and BMI ≥30 kg/m^2 were classified as obese according to the World Health Organisation Asia Pacific Guidelines [7].

Data was entered in Microsoft Excel sheet and was analysed using SPSS version 18. Descriptive statistic used were mean, standard deviations and proportions.

RESULTS

The present study included 362 bus drivers and conductors of Karaikal, Puducherry. Majority of the respondents (39.5%) were in 41-50 years age group followed by those in 31-40 years age (34.5%). Majority of study participants were married (89.8%) and belonging to Socioeconomic class I (94.8%). The sociodemographic details are given in Table-1.

Table-1: Socio Demographic Characteristics of Study Participants

Characteristics	Frequency	Percentage
Age in Years		
Less than 30	21	5.8%
31-40	125	34.5%
41-50	143	39.5%
51-60	73	20.2%
Total	362	100%
Marital Status		
Unmarried	29	8%
Married	325	89.8%
Divorce	4	1.1%
Separate	4	1.1%
Total	362	100%
SES Class		
Class I	343	94.8%
Class II	14	3.9%
Class III	5	1.4%
Total	362	100%

The prevalence of obesity in our study was 16% and pre obese was 63.26% whereas 7.73% were overweight. The mean BMI was 27.29± 3.9 kg/m^2, mean weight was 70.78 ± 12.97 kgs and mean height was 163± 6.92 cms among the study participants.

Highest prevalence of obesity was seen in 51-60 years age group i.e. 30.14% whereas for overweight maximum participants i.e. 14.69% were in 41-50 years age group. Figure-2 shows the measurement of BMI in various age groups. A highly significant association was present between age and obesity (p value 0.001 and χ^2 = 53.52) (Table-2).

Table-2: Prevalence of Obesity according to age of the Study Participants

Age	Underweight		Normal		Overweight		Pre-Obese		Obese		Total
	n	%	n	%	n	%	n	%	n	%	n
Less than 30 years	0	0	3	14.29	0	0	18	85.71	0	0	21
31-40	10	8	15	12	0	0	84	67.2	16	12.8	125
41-50	1	0.69	15	10.49	21	14.69	87	60.84	19	13.29	143
51-60	2	2.74	2	2.74	7	9.59	40	54.79	22	30.14	73
Total	13	3.59	35	9.67	28	7.73	229	63.26	57	15.75	362

DISCUSSION

Obesity is a fore runner to diabetes mellitus and cardiovascular diseases. In the present study the prevalence of obesity (BMI above 30 kg/m^2) was found to be 16%. Proportion of participants with BMI above 25kg/m^2 was found to be 79.01% which is much higher than that found in males of general population of Karaikal, Puducherry i.e. 38.4% according to NFHS-4 [1]. In the present study more than half of the study population was found to be pre-obese (BMI between 25-29.9 kg/m^2). Higher proportion of overweight (BMI between 25-29.9 kg/m^2) were found in another study (57.5%) done by Raquel PH et al among interstate bus drivers in Brazil [8].

In the present study the prevalence of obesity was found to be 15.75% which is similar to that found in a study done by Singaravel SS *et al*., among bus drivers in Chennai where the prevalence of overweight and obesity was found to be 41% and 14% respectively [9]. Similar results were also found in a study conducted by Andrzej M *et al*., among drivers in Poland, 45.3% had overweight and 17.4% were diagnosed with obesity [10].

In the present study, highest prevalence of obesity was seen in the older age group above 50 years of age and overweight was high in those belonging to 41-50 years of age group. Various studies have shown prevalence of obesity and overweight more in the older age groups [11].

Driving as such is a sedentary occupation combined with dietary factors, eating habits and other lifestyle preferences can lead to development of obesity among the bus drivers.

Limitations

- We could not establish causal relationship between risk factors and obesity as this was a cross sectional study.
- Abdominal obesity was not taken in account as this study was focussed only on general obesity.

CONCLUSION

This study showed that prevalence of overweight and obesity is high among bus drivers and conductors. Various studies have suggested that bus drivers have high morbidity and mortality due to obesity, hypertension and cardiovascular diseases [12, 13]. Hence it is imperative to explore the causal factors and design interventions to improve their health.

REFERENCES

1. International Institute for Population Sciences (IIPS). National Family Health Survey (NFHS-4), India, Mumbai: IIPS. 2015-16; pp. 01.
2. Schulte PA, Wagner GR, Ostry A, Blanciforti LA, Cutlip RG, Krajnak KM, Luster M, Munson AE, O'Callaghan JP, Parks CG, Simeonova PP. Work, obesity, and occupational safety and health. American journal of public health. 2007 Mar;97(3):428-436.
3. Caban AJ, Lee DJ, Fleming LE, Gómez-Marín O, LeBlanc W, Pitman T. Obesity in US workers: The national health interview survey, 1986 to 2002. American Journal of Public Health. 2005 Sep;95(9):1614-22.
4. Allman-Farinelli MA, Chey T, Merom D, Bauman AE. Occupational risk of overweight and obesity: an analysis of the Australian Health Survey. Journal of Occupational Medicine and Toxicology. 2010 Dec;5(1):14.
5. John LM, Flin R, Mearns K. Bus driver well-being review: 50 years of research. Transportation research part F: traffic psychology and behaviour. 2006 Mar 1;9(2):89-114.
6. Kelly, T., Yang, W., Chen, C. S., Reynolds, K., & He, J. (2008). Global burden of obesity in 2005 and projections to 2030. *International journal of obesity*, *32*(9), 1431-1437.
7. Who EC. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. Lancet (London, England). 2004 Jan 10;363(9403):157.
8. Hirata RP, Sampaio LM, Leitão Filho FS, Braghiroli A, Balbi B, Romano S, Insalaco G, Oliveira LV. General characteristics and risk factors of cardiovascular disease among interstate bus drivers. The Scientific World Journal. 2012;2012.
9. Singaravel SS, Kandaswamy EK. A cross sectional study on prevalence of obesity among bus drivers of Metropolitan Transport Corporation Limited, Chennai. International Journal Of Community Medicine And Public Health. 2017 Nov 23;4(12):4456-9.
10. Marcinkiewicz A, Szosland D. Selected risk factors of diabetes mellitus among road transport drivers. International journal of occupational medicine and environmental health. 2010 Jan 1;23(2):175-180.
11. Aguilar-Zinser JV, Irigoyen-Camacho ME, Ruiz-Garcia-Rubio V, Perez-Ramirez M, Guzmán-Carranza S, Velázquez-Alva CM, Cervantes-Valencia LM. Prevalance of overweight and obesity among professional bus drivers in Mexico. Gaceta medica de Mexico. 2007;143(1):21-5.
12. Tüchsen F, Hannerz H, Roepstorff C, Krause N. Stroke among male professional drivers in Denmark, 1994–2003. Occupational and environmental medicine. 2006 Jul 1;63(7):456-460.
13. Winkleby MA, Ragland DR, Fisher JM, Syme SL. Excess risk of sickness and disease in bus drivers: a review and synthesis of epidemiological studies. International Journal of Epidemiology. 1988 Jun 1;17(2):255-262.