A STUDY OF PREVALENCE OF OVERWEIGHT AMONG DRIVERS AND CONDUCTORS OF PURNEA-KATIHAR, KOSI DIVISION, KATIHAR

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ABSTRACT

BACKGROUND

Overweight has become a major disorder affecting a large population more than any other disease in the world. The aim is to study the prevalence of overweight and obesity among drivers and conductors of Purnea-Katihar and to compare the prevalence of overweight among them.

MATERIALS & METHODS

Randomly selected 365 drivers and 370 conductors were personally interviewed using predesigned, pretested structured questionnaire, physical examination was done to measure height, weight, waist circumferences and hip circumferences. Body Mass Index, waist circumferences and waist-hip ratio were used to assess control and overweight cases, and rates were calculated. Chi-square test was used to test the difference of prevalence between drivers and conductors.

RESULTS

The study showed that in drivers 43.3% were overweight, 22.2% were obese and 23.6% were having a waist circumference > 102 cm. Among conductors, 28.1% were overweight, 16.2% were obese and 18.1% were having a waist circumference of >102 cm.

CONCLUSION

The prevalence of overweight was high among drivers compared to conductors. The differences were found to be statistically significant, considering the high prevalence of overweight among drivers and conductors, and necessary preventive measures need to be promoted. The control of overweight by dietary changes and increase in physical activity is recommended.

KEYWORDS

Overweight, Drivers, Conductors.

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BACKGROUND

Overweight or obesity is caused by abnormal growth of adipose tissue due to enlargement of fat cell or an increase in number of fat cells. Being overweight is a chronic disease that is increasing in prevalence and is posing a serious risk for development of various diseases like hypertension, diabetes mellitus, hyperlipidaemia, coronary heart disease, gall bladder disease, osteoarthritis and certain forms of cancer.⁽¹⁾ In the World Health Report of April 25th 2003, WHO identifies overweight and its complications among the top 10 global risks affecting today's disease and disability which accounts for 40% of Global Death.^(2,3)

Overweight is the fifth leading risk of global deaths. Worldwide, obesity has more than doubled since 1980. In 2008, more than 1.4 billion adults, 20 years and old, were overweight. Of these, over 200 million men and nearly 300 million women were obese. In 2012, more than 40 million children under 5 years of age were overweight. Once considered a high income country problem, overweight and obesity are now raising in low and middle income

countries, particularly in urban setting. Close to 30 million overweight children are living in developing and 10 million in developed countries.⁽⁴⁾ In India, the noncommunicable risk factor phase 2 was carried out in the year 2007-2008, in states of Andhra Pradesh, Kerala, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttarakhand and Mizoram. The survey shows high prevalence of overweight in all age groups except in 15-24 years group. Overweight prevalence was higher among females and males and in urban areas than rural areas, low prevalence was recorded among people with lower level of education (illiterate and primary level) and in people whose occupation was connected with agriculture or manual work.⁽⁵⁾

In India, 1.3 percent males and 2.5 percent females aged more than 20 years were obese in the year 2008.⁽⁶⁾ Obesity can occur at any age and generally increases with age. Infants with excessive weight gain have an increased incidence of obesity in later part of life.⁽⁷⁾ Weight control is widely defined as approaches to maintaining weight within a healthy (i.e. normal or acceptable) range of body mass index of 18.5 to 24.9 Kg/m² throughout adulthood (WHO expert committee 1995). It should also include prevention of weight gain of more than 5 Kg in all people. In those who are already overweight, a reduction of 5-10 percent of body weight is recommended as an initial goal.⁽⁸⁾

The bus drivers and conductors are one such group who are at a risk of developing overweight due to nature of their profession. They form one of the largest groups of employing personnel of different caste and creed, various age groups,

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subjected to severe stress and strain, having irregular hours of duty, having habits like smoking and alcohol, etc. Once they develop overweight they are prone to develop hypertension, coronary heart disease and stroke putting them and their road users at risk. Hence, there is a need to enquire into the prevalence of overweight in the community setting of bus drivers and conductors. It was against this backdrop of importance of overweight, coupled with lack of community based studies in this subject in bus drivers and conductors we were prompted to take up the present study.

The aims and objectives of the study were to see and measure the prevalence of overweight among bus drivers and conductors of Purnea-Katihar in Kosi Division, Katihar.

MATERIALS AND METHODS

A cross sectional study was undertaken to see the prevalence of overweight among bus drivers and conductors of Purnea-Katihar in Kosi Division in Katihar. The study was conducted for a period of one year from Oct. 2015-Sep. 2016. The prevalence of overweight among bus drivers and conductors of Purnea-Katihar in Kosi Division, Katihar was not known to calculate the sample size, the prevalence was supposed to be 50% with a 10% relative error of prevalence. The sample size arrived at was 400 i.e. 400 drivers and 400 conductors, However, 365 drivers and 370 conductors participated in the study. All were male.

The study participants were personally interviewed using predesigned and pretested structured questionnaire. The instruments used in the study included height stand (accurate up to 1 cm), measuring tape (accurate up to 1 cm), weighing machine (accurate up to 0.5 kg). All the instruments and techniques were initially standardised during pilot study and were regularly standardised throughout the period of

data collection. The weighing machine was also checked and corrected, if required after every 10th reading during the study period. Body Mass index [BMI - Weight] in Kg/(height in metre)²] was used to assess overweight. Waist circumference and Waist-Hip Ratio (WHR) were used to assess central obesity. According to WHO criteria, overweight is defined as BMI>25, obesity is defined as BMI>30 and overweight is defined as WHR> 1 and waist circumference > 102 cm. Overweight reflects an increased risk for cardiovascular disease and other metabolic complications.⁽¹⁾

The medical ethics committee of KMC has gone through the report and considered the proposed research work. The committee has no objection if the research work is done after the consent is taken from the study population. Data was analysed using the software SPSS 10.0.1 for windows. Summary figures like rates were calculated, Chi-square test was used to test the difference of prevalence of overweight between drivers and conductors.

RESULTS

Drivers 400 and conductors 400 were selected randomly, but only 365 drivers and 370 conductors participated in the study.

The minimum age of the study participants was 26 years for drivers and 25 years for conductors and maximum age was 57 years for drivers and 55 years for conductors. All the study participants were male. Most of the drivers (36.7%) and conductors (34.9%) were in the age group of 40-49 years.

The present study showed that 43.3% of drivers and 28.1% of conductors were overweight. This difference among drivers compared to conductors was found to be statistically significant. (Table 1).

Status BMI	No. of Cases	
	Drivers (n=365)	conductor (n=370)
Underweight (<18.5)	17(4.7%)	20 (5.4%)
Normal weight (18.5-24.99)	190(52.0%)	246 (66.5%)
Overweight (>25)	158 (43.3%)	104 (28.1%)
$\chi^2 = 18.533$, df = 2; p = 0.000		

Table 1. Distribution of Cases Accordingly to BMI

The prevalence of overweight according to WHR>1 was 21.1% among drivers and 14.1% among conductors and this difference was also statistically significant (p=0.012) (Table-2).

Waist-Hip Ratio	No. of Cases	
	Drivers (n=365)	Conductors (n=370)
< 1	279 (76.4%)	303 (81.9%)
> 1	86 (23.6%)	67 (18.1%)
$\chi^2=6.296$; df = 1; p= 0.012		

Table 2. Distribution of Cases Accordingly to Waist-Hip Ratio

Similarly, the prevalence of central obesity according to waist circumference (waist- circumferences>102 cm) was 23.6% among drivers and 18.1% among conductors. This

difference among drivers compared to conductors was also statically significant (p=0.069) (Table-3).

Waist Circumference	No. of Cases	
	Drivers (n=365)	Conductors (n=370)
< 102 cm	279 (76.4%)	303 (81.9%)
> 102 cm	86 (23.6%)	67 (18.1%)
$\chi^2=3.315$; df = 1; p= 0.069		

Table 3. Distribution of Cases of According to Waist Circumference

Among the drivers and conductors who were obese, most of them were having a mixed diet.

DISCUSSION

The present study revealed that the prevalence of overweight and obesity was 43.3% and 22.2% respectively in drivers and 28.1% and 16.2% respectively in conductors. The prevalence in this study is higher as compared to various previous studies⁽⁹⁻¹⁴⁾ done on general population groups. These studies showed a prevalence ranging from 7% to 34%. According to the World Health Organisation (WHO), nearly 20 to 40% of adult population are affected by overweight.⁽¹⁾

In a study conducted in Taiwan by Wang and Lin,⁽¹⁵⁾ the prevalence of overweight was 9.6% among urban bus drivers which is less compared to this study. However, they had also observed an increased prevalence of overweight among bus drivers than the other skilled workers.

Overweight, defined by WHR>1 and waist circumferences>102 cm was seen in significant number of drivers and conductors. A WHR>1 was seen among 21.1%, drivers and 14.1% of conductors. Waist circumference > 102 cm was seen in 23.6% of drivers and 18.1% of conductors. Overweight is an independent risk factor for coronary heart disease (CHD).^(1,16,17) This occurs both through altered secretion of adipocyte-derived biologically active substances (adipokines) including free fatty acids, adiponectin, interleukin-6, tumour necrosis factor alpha, plasminogen activator inhibitor-1 and through exacerbation of insulin resistance and associated cardiometabolic risk factor.⁽¹⁸⁾

In a study⁽¹⁹⁾ conducted in north of Iran, among urban population aged 20-70 years, the prevalence of overweight was found to be 28.3% which is comparable to this study.

In this study, it was also seen that the prevalence of overweight as well as obesity was higher among drivers compared to the conductors and this difference was statistically significant. Hence, drivers are more prone to develop CHD and metabolic complications. Overweight bus drivers are more likely to become fatigued than non-overweight drivers. As they spend long hours on roads, they put themselves and their road users at risk of road traffic accidents.⁽²⁰⁾

CONCLUSION

Overweight is quite prevalent among bus drivers and conductors, especially more among drivers. BMI is a simple and effective way to screen overweight and obese people. Both WHR and waist circumference are independent tools for measurement of overweight. Timely necessary measures need to be promoted to prevent their progression and complications associated with obesity. Measures to increase physical exercise both at home and at work place should be undertaken, and screening programmes to detect diabetes and hypertension should be undertaken among the overweight study participants.

Recommendations

The control of overweight by weight reduction- this can be achieved by dietary changes both at home and Dhaba (Hotel Road Side), and increased physical activity both at home and at work place should be undertaken.

- a. Dietary Change- The proportion of energy dense foods such as simple carbohydrates and fats should be

reduced; the fibre content in the diet should be increased through the consumption of common un-refined foods with adequate levels of essential nutrients in the low energy diets.

- b. Increased physical activity-Regular physical exercise is the key to increased energy expenditure.

Limitations

Indirect and imperfect measurement does not distinguish between body fat and lean body mass. Increased waist-to-hip ratio can be caused by increased abdominal fat or decrease in lean muscle mass around the hips.

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