



OBESITY; PREVALENCE AMONG DRIVERS AND CONDUCTORS IN MULTAN, PAKISTAN

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ABSTRACT... Obesity is currently considered as a global issue to public health. Overweight and obesity among professional workers, particularly among professional drivers and conductors is becoming an equally challenging, yet under recognized, problem in developing countries including Pakistan. The study aimed to assess the prevalence of obesity and central obesity among professional drivers and conductors in Multan city, Pakistan. **Study Design:** A cross-sectional study. **Methodology:** A total of 345 professional drivers and conductors were studied for public transport and loader vehicles. The anthropometric characteristics of the participants were focused including the body mass index (BMI), waist circumference (WC) and waist-to-hip ratio (WHR). Along with descriptive statistics and percentages, two-sample t-test was used. **Results:** The mean BMI of all the participants was 24.35. More than 50% of the drivers and conductors had excess body weight (i.e. $BMI \geq 25$ kg/m²). For central obesity, 86 (43.7%) drivers and 28(18.9%) of conductors had increased waist (i.e. $WC \geq 94$ cm). Similarly, 34.5% of the said professionals had WHR above the adequate level (i.e. $WHR > 0.95$). The averages of BMI, WC and WHR of the public transport vehicle drivers were significantly higher than those of the loader vehicle drivers. **Conclusion:** The present study concludes that the professional drivers and conductors are much likely to have excess weight.

Key words: Body mass index; Central obesity; Waist circumference; Waist-to-hip ratio.

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INTRODUCTION

Obesity is currently considered as a global issue to public health that affects both young people and adults and now children too. It has been connected with several health risks, physical as well as psychological.¹⁻³ Therefore, this fact risk led the World Health Organization (WHO) to declare it as a global epidemic. WHO reported that obesity and its related complications among the top ten worldwide risks account for 40 percent of global deaths.^{4,6}

In addition to obesity, the available literature also leads to observe central obesity which reflects an increased risk of cardiovascular disease and many other metabolic complications.^{7,9} Central obesity is assessed with the help of WC and WHR.

Overweight and obesity among professional workers, particularly among professional drivers and conductors (driver's helpers) is becoming an equally challenging now a day. Such drivers and

conductors are at high risks of getting overweight or obesity due to nature of their profession which involves exposure to stress, sitting continuously on driving seat for a long shift, night or irregular working hours of duty, and short sleep etc. Moreover, these professionals usually take their lunch and dinner in restaurants that mostly carry high calories and low nutrition foods. Furthermore, inadequate diet, careless habits like smoking and alcohol drinking etc. and sedentary life turn these professionals highly exposed to obesity. Globally, prevalence of overweight and obesity among this professional community has been reported by various researchers. For instance, the prevalence of obesity among drivers was reported to be 23.1% in Kashan, Iran¹⁰ and 36.5% in Brazil.¹¹ The incidence of overweight and obesity among the drivers and conductors of Belgaum city was accounted to be 43.3% and 28.1%, respectively.¹²

A colossal literature by various researchers regarding overweight and obesity is also already

available in Pakistan. However, it has been completely neglected to seek the prevalence of overweight and obesity among the professional drivers and conductors in Pakistan. This fact indexed to carry such study in Pakistan.

The objective of the present study is two-fold: i) to express the distribution of overall obesity using BMI, WC and WHR among professional drivers and conductors community in Pakistan; ii) to compare the prevalence of central obesity via various cut-offs for WHR compared to WC in different BMI groups.

MATERIAL AND METHOD

The present study is a cross-sectional study which was carried out to see the prevalence of overweight and obesity among professional drivers and conductors in a central city Multan of Pakistan. The data for 345 such professionals were collected from different transport stands existing in Multan where drivers and conductors of transport vehicles including loader vehicles were easily available. The data were obtained by means of a self-administered questionnaire. The said questionnaire was comprised of three sections. The first section was about the questions related to socio-demographic variables like age (in years, rounded to the next year), marital status, educational status, monthly income (in Pak rupees, PKR), smoking habits and kind of smoking products. The second section was related to the questions like job nature (driver or conductor) and type of vehicle driving/conducting (mini-bus, bus, truck, trollers etc.). Third section consisted of information regarding anthropometric characteristics of the participants. The data about height (nearest 0.1 cm), weight (nearest 0.5 kg), WC and HC (nearest 0.1 cm) were obtained.

After getting the necessary measurements, the BMI of each participant to assess obesity, defined as $BMI = \text{Weight in kg.}/(\text{Height in meters})^2$, and was categorized into underweight (if $BMI < 18.5$), normal weight ($18.5 \leq BMI < 25$), overweight ($25 \leq BMI < 30$) and obese ($BMI \geq 30$) participants.

The central obesity of each participant was assessed by WC and WHR which were further categorized according to available cut-off points for risk of metabolic complications. According these cut-off points, there is increased risk of metabolic complications in men if $WC \geq 94$ cm and substantially increased risk if $WC \geq 102$ cm. Similarly, the cut-offs of WHR for increased and substantially increased risk for men are $WHR > 0.95$ and $WHR > 1.0$, respectively.^{13,14} For descriptive measures, mean (\pm standard deviation: SD) and percentages were computed for different anthropometric and related variables. The two-sample t-test was used to compare means of different obesity indices for the drivers and conductors.

RESULTS

In the present study of 345 male participants, 197 (57.1%) were professional drivers and 148 (42.9%) were professional conductors. Table-I. presents some descriptive measures. The mean age of the participants was $32.98 (\pm 11.17)$. Most of the participants 225 (65.2%) represented the age-group 15-35 years which concludes that mostly participants were relatively young. Majority (76.2%) of the participants were reported to be married. About half (50.4%) of the respondents were illiterate. Out of 197 drivers, 121 (61.4%) were drivers of public transport vehicle and 76 (38.6%) were loader vehicle drivers. Among 148 conductors, 94 (63.5%) and 54 (36.5%) were conductors of public transport vehicles and loaders, respectively. When the respondents were asked about smoking then 155 (44.9%) were reported to be cigarette smokers and 157 (45.5%) did not use to smoke. Moreover, 33 (9.6%) were using smokeless tobacco (a special type of powdered tobacco which is usually kept under lower lip inside mouth and is known as "naswaar").

Variables	n (%)	Mean \pm SD
Marital status		
Married	263 (76.2)	
Single	82 (23.8)	
Age (years)		32.98 \pm 11.17
15-25 years	97 (28.1)	
26-35 years	128 (37.1)	
36-45 years	75 (21.7)	
Over 45 years	45 (13.0)	
Education level		
Illiterate	174 (50.4)	
Primary	47 (13.6)	
Middle	71 (20.6)	
Secondary	42 (12.2)	
Higher secondary	11 (3.2)	
Participant status		
Drivers	197 (57.1)	
Conductors	148 (42.9)	
Vehicle type		
Public transport vehicle (buses and mini-buses etc.)	215 (62.3)	
Loader vehicle (trucks and trollers etc.)	130 (37.7)	
Smoking status		
Cigarette smoker	155 (44.9)	
Naswaar	33 (9.6)	
Never smoker	157 (45.5)	
Monthly income (PKR)		14100 \pm 7001.42
Height (cm)		167.32 \pm 7.56
Weight (kg)		68.13 \pm 13.25
BMI (kg/m ²)		24.35 \pm 4.65
Underweight (<18.50)	18 (5.2)	
Normal (18.50-24.99)	150 (43.5)	
Overweight (25-29.99)	144 (41.7)	
Obesity (\geq 30)	33 (9.6)	
WC(cm)		88.78 \pm 12.87
< 94 (normal)	219 (63.5)	
94-102 (increased risk)	76 (22.0)	
\geq 102 (substantially increased risk)	50 (14.5)	
WHR (cm)		0.95 \pm 0.05
< 0.95 (normal)	152 (44.1)	
0.95-1.0 (increased risk)	145 (42.0)	
>1.0 (substantially increased risk)	48 (13.9)	

Table-I. Socio-economic, demographic and anthropometric characteristics of the participants

The mean (\pm SD) height (in cm) and weight (in kg) of the respondents were noted to be 167.32 \pm 7.56 and 68.13 \pm 13.25, respectively. The average value of BMI indicated normal weight of the respondents. The average waist circumference (88.78) was also normal but the average WHR pointed the respondents at increased risk of metabolic complications. Almost half of the respondents (51.3%) were either overweight or obese. On the basis of WC and WHR, about 14% of the respondents were found to be at extremely high risk.

Table-II. Compares the averages of BMI, WC and WHR for the respondents corresponding to two types of vehicles; passenger vehicles and loader vehicles. With the help of two-sample t tests, these comparisons are made for drivers and conductors, separately. It is reported that all the averages of BMI, WC and WHR for the drivers of public vehicles are significantly greater than those of the drivers of loader vehicles. The public vehicle drivers are also observed to be overweight (with mean BMI, 26.06) and at risk of metabolic complications. On the other hand, the earlier stated mean values are not significantly different for the conductors of public vehicles and loader vehicles.

The prevalence of central obesity is portrayed in Table-III. With the help of the BMI, WC and WHR for their standard cut-off values. It is reported that 54.3% of the drivers are overweight while 11.2% are obese. The percentages of the drivers at increased and substantially increased risk of metabolic complications are more 45.7% and 18.8%, respectively on the basis of WHR. Similar are the percentages if the WC is considered. Among the obese drivers, 72.7% and 86.4% drivers are at increased risk when WHR is considered. On the other hand, 32.4% conductors are overweight and obese. Among the obese conductors, the percentages of risk are 45.5% and 81.8% for WHR and WC, respectively. As a whole, when both drivers and conductors are considered, it is found that more than 33% of the respondents have WC \geq 94 cm and WHR \geq 0.95. Among the obese respondents, 24.2% have WHR > 1 and 54.5% have WC \geq 102 cm.

Variables	n (%)	BMI	WC	WHR
		Mean (SD)	Mean (SD)	Mean (SD)
Drivers (n =197)				
Vehicle type				
Public transport vehicle	121(61.43)			
Loader vehicle	76 (38.57)	26.06(3.62) 24.57(4.91) $\{t = 2.44^*$	96.69(10.51) 88.38(9.86) $\{t = 5.54^*$	0.97(0.06) 0.95(0.05) $\{t = 2.55^*$
Conductors (n = 148)				
Vehicle type				
Public transport vehicle	96 (64.86)			
Loader vehicle	52 (35.14)	83.15(12.99) 81.38(11.64) $\{t = 0.82^{NS}$	83.15(12.99) 81.38(11.64) $\{t = 0.82^{NS}$	0.95(0.05) 0.94(0.04) $\{t = 1.57^{NS}$

Table-II. Mean comparison of anthropometric measurements

* significant (p <0.05) NS: non-significant

BMI groups (Kg/m ²)	n(%)	Increased risk	Substantially	Increased risk	Substantially
		(0.95 < WHR ≤ 1)	increased ris	(94≥WC < 102)	increased risk
		n (%)	(WHR > 1)	n (%)	(WC ≥ 102 cm)
			n (%)		n (%)
Drivers					
Overweight (25-29.99)	107(54.3) ^a	74(69.2)	29(27.1)	67(62.6)	25(23.4)
Obese (≥30)	22(11.2) ^a	16(72.7)	08(36.4)	19(86.4)	14(63.6)
Total for 197 drivers	129(65.5) ^a	90(45.7) ^a	37(18.8) ^a	86(43.7) ^a	39(19.8) ^a
Conductors					
Overweight (25-29.99)	37(25.0) ^b	24(64.9)	3(8.1)	19(51.4)	6(16.2)
Obese (≥30)	11(7.4) ^b	5(45.5)	0(0.0)	9(81.8)	4(36.4)
Total for 148 conductors	48(32.4) ^b	29(19.6) ^b	3(2.0) ^b	28(18.9) ^b	10(6.8) ^b
(Drivers and conductors)					
Overweight (25-29.99)	144(41.7) ^c	98(68.1)	32(22.2)	86(59.7)	31(21.5)
Obese (≥30)	33(9.6) ^c	21(63.6)	08(24.2)	28(84.8)	18(54.5)
Total for 345 respondents	177(51.3) ^c	119(34.5) ^c	40(11.6) ^c	114(33.0) ^c	49(14.2) ^c

Table-III. Prevalence of central obesity using WHR and WC cut-offs in each BMI groups

percentages out of 197 drivers; b: percentages out of 148 conductors; c: percentages out of 345 respondents

DISCUSSION

In Pakistan, it is not common practice to see prevalence of obesity and central obesity jointly for some specific population, namely some professional drivers and conductors. Thus, our study results are not directly comparable with the available studies conducted for general population in Pakistan.

A cross-sectional study of 345 professional drivers and conductors was undertaken from Multan city as a case study of Pakistan. The present study revealed that percentages for overweight and obesity are 41.7% and 9.6%, respectively, among

345 participants. This prevalence regarding is much higher as compared to various previous studies conducted in Pakistan for general population.^{15,16} As compared to the conductors, drivers are more likely to have excess weight (BMI ≥ 25) i.e. (65.5% vs. 32.4%). A similar pattern was seen in a study¹² conducted in an Indian city, Belgaum, among professional drivers and conductors aged 25-57 years, where more drivers were overweight and obese than conductors. This finding is evident from the nature of the duty of a driver and a conductor. Drivers have to sit for as long as they drive but on the other side, conductors use to move frequently. The obesity

prevalence among drivers also coincides with those found in many available studies.^{10,11,17,18}

According to this study, the prevalence of central obesity on the basis of WC (≥ 94 cm) is reported to be 36.5% which is higher than other studies^{7,8} about WC for general population groups.

Our findings indicated an average prevalence of all anthropometric characteristics of drivers of public transport vehicles was higher than that of the loader vehicle drivers. A similar finding is available in a study¹⁹, reporting excess weight and central obesity among the drivers of public transport. The difference may be due to the fact that loaders are usually slow moving vehicles and highly laden so the drivers take many stops in their long routes and thus, their continuous sitting posture breaks. However, the stated average prevalence was not significantly different between the conductors of both types of vehicles.

This study showed that 63.45% of drivers and 25.68% of conductors had WC above the adequate level i.e. (WC ≥ 94). These results were consistent with those given by Joshi et al.¹² in which more drivers were central obese than conductors. The results for drivers only were also comparable with a Brazilian study¹¹ in which more than half (58.5%) of the professional drivers with increased WC.

When WHR is focused as a measure of central obesity, (119+40) 46.1(34.5+11.6)% of the respondents had WHR >0.95 including (40) 11.9% with WHR >1 . The extreme cases of central obesity (WHR >1) among drivers and conductors were 18.8% and 2.0%, respectively. These percentages are smaller as compared to those observed in the already discussed Indian study¹² where the percentages were 21.1% and 14.1%, respectively for the drivers and conductors.

While comparing WC and WHR as measures of central obesity, it is already reported²⁰, that the prevalence of central obesity using WHR is smaller than that with WC. However, in the present study about professional drivers and conductors, no such notable difference is found. It is reported

that there are (119+40) 46.1% and (114+49) 47.2% cases of central obesity and having risk of metabolic complications considering WC (≥ 94) and WHR (>0.95), respectively (referring to Table 3 for total 345 respondents).

CONCLUSIONS

Our study of 345 professional drivers and conductors reveals that these professional should keep eyes on their weight gain. A considerable majority become either overweight or obese and can be exposed of risk of metabolic complications. On the basis of WHR, more than 50% of the said professionals are reported to be at increased and substantially increased risk. All the obesity indices, including central obesity, among the drivers of public transport are higher than those of loading vehicles. Since, majority of the drivers and conductors is reported to be illiterate therefore, some awareness programs in this regard may be introduced in order to save them from different health issues due to excess of body weight.

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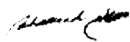

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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Muhammad Aslam	Conceived the idea layout the design and statistical framework. He also gave the primary draft of the manuscript.	
2	Muhammad Asif	Collected the data and performed the statistical analysis	
3	Saima Altaf	Took the responsibility of interpretation of the result, reviewing and editing of the draft.	