Dietary Intake Pattern Associated With General and Central Obesity Among Professional Drivers of Multan, Pakistan

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Abstract

Obesity among professional drivers is a considerable issue. The study focuses on the dietary intake pattern of the professional drivers in order to assess their general and central obesity.

Methods: A cross-sectional study of 197 professional drivers was carried out for public transport and loader vehicles. Convenient sampling technique was adopted for data collection. Dietary pattern of the drivers and its association with their body mass index (BMI), and waist circumference (WC) were focused. Along with descriptive statistics and percentages, chi-square test and two-sample t-test were used to analyze the data.

Results: The mean BMI of the participants was 25.48 (± 4.21) Kg/m² and WC was 93.48 (11.01) cm, respectively. There is significant association between dietary pattern and obesity among the professional drivers (c² = 7.90, p-value < 0.05 for general obesity and c² = 8.13, p-value < 0.01 for central obesity). Majority of the drivers regularly eat three times a day and they eat mostly outside their home indicating one of the major factors of obesity (both general and central).

Conclusion: The study with professional drivers reveals that dietary intake behaviour is associated with obesity and the professional drivers should be careful about their dietary pattern especially while taking meals outside their homes.

Keywords: Body Mass Index; Central Obesity; Dietary Habits; Waist Circumference.

Introduction

Obesity is considered as an escalating public health issue now a day. Over the last few decades, its prevalence across any age-group of the people is well documented in all over the world. In the developing countries, obesity prevalence rate has three times increased. Rates for overweight among adults have jumped from 10% to 25% and for obesity from 2% to 10%. Such estimates for Pakistani adults also shows that 28.2% of women and 22.0% of men are considered to be overweight or obese. Many physical and psychological risks about health are connected with obesity.

There are some major factors like age, race, gender and low socio-economic status, poor sleep pattern, lack of physical activity and irregular and long working hours may influence the likelihood of emerging obesity. In the enduring research, unhealthy dietary habits include inadequate and imbalance diet also another significant factor found for getting obesity and its consequences.

Several epidemiological studies for general population has been reported in Pakistan to discuss...
This chronic health issue. However, in Pakistan, there is only one available study by Safdar et al. that reports association between obesity and pattern of diet. The matter of obesity among professionals, especially among professional drivers is also becoming very alarming now a day and should be clearly monitored. A regional study with the Pakistani drivers found that more than 50% of these professionals are either overweight or obese. Nonetheless, they do not take crucial covariate i.e., dietary pattern of the drivers into account, posing a serious change in their body weights. Few studies in foreign literature, reported that driver's dietary habits of are usually affected due to their erratic work demands and busy schedule. Such professionals usually consume foods from restaurant with less nutrition but high calories and such inapt dietary characteristics turn these professionals exposed to obesity.

This research in Pakistan has therefore planned to study the dietary pattern of drivers in order to assess their general and central obesity. This concern motivates the present study.

**Methods**

The present study was carried out during Feb 2014 to April 2014 in Multan city, located at the central region of Pakistan's map. The complete sampling scheme details about data collection and sample size has been described in earlier studies. This study includes 197 professional drivers aged between 18-68 years. A driver having any physical disability or having less than one-year professional experience was excluded from the study. Departmental ethics committee of Bahauddin Zakariya University, Multan approved this study.

Data collection activity of this study was completed through well-trained data collection team and the required information from the drivers were taken through self-administered questionnaire. Data about socio-demographic and profession related variables i.e., age (years), marital status, educational level, monthly income and vehicle type and driving hours etc., respectively; were recorded in first section of the questionnaire. In section second, some questions related to dietary pattern were asking, i.e., number of meals intake per day and frequent place for taking breakfast, lunch and dinner. While as, the measurement section contained the information about the anthropometric measurements.

Height (in inches) and weight (in kg) of each driver was taken with light clothing and without shoes by using standard protocols. For assessing the general obesity, body mass index (BMI) was used, computed as (Kg/meter^2). A driver was categorized to be overweight if 25>BMI and obese if BMI Ø30. While for assessing the central obesity of drivers, waist circumference (WC) cut-off suggested for metabolic complication risks were used. A driver is considered to be at increased and highly increased risk of metabolic complications if 94 < WC < 102 cm and WC Ø102 cm, respectively.

Descriptive statistics i.e. frequency along with their percentage of each categorical variable and mean and standard deviation (SD) of each quantitative variable were calculated. The associations between categorical variables and the mean difference of different anthropometric measurements were checked by mean of Chi-square and Two-sample t-test, respectively. Statistical software “SPSS”, version 16.0 was used for all statistical analysis.

**Results**

The general characteristics of the participated drivers were presented in Table 1. A total of 197 drivers (61.4% public transport vehicle and 38.6% loader vehicle) aged 18-68 years were included in the study. Mostly (93.4%) drivers were married and about half (48.7%) were illiterate. The mean age, BMI and WC of the total drivers were 36.53 (±10.46) years, 25.48 (±4.21 Kg/m) and 93.48 (±11.01) cm, respectively. Overweight and obesity prevalence in all participants were 54.3% and 11.2%, respectively. About half (47.7%) of the professional drivers are reported to have increased risk of metabolic complications (i.e., WC Ø 94 cm). Results also revealed that general (29.4%) and abdominal (7.6%) obesity was more prevalent among the drivers in 26–35 years age group.

Table 2 described the relationship between vehicle type and dietary intake characteristics with general and central obesity of all drivers. Among the variables analyzed, results revealed that both vehicle type and the frequencies (2 or 3 times) of meal taken per day, respectively were significantly associated with
general obesity (Chi-Square = 5.72, p-value ≤ 0.05 and Chi-Square = 7.90, p-value < 0.05, respectively) and central obesity (Chi-Square = 9.41, p-value < 0.01 and Chi-Square = 8.13, p-value < 0.01, respectively). Significance of the same pattern was also found for different meal-taking (breakfast/lunch/dinner) status of the professional drivers. More than half (66.49%) of the professional drivers were taking their meals thrice a day. Among these drivers, 65.65% (86/131) were overweight or obese and 14.50% (19/131) were at increased risk of metabolic complications (i.e., WC ≥102). Among the said drivers, very little percentages of drivers for not taking their breakfast, lunch and dinner, were observed. However, 53.30%, 69.10%, and 48.80% of the professional drivers were noted for dining outside home (at hotels/restaurants) for breakfast, lunch and dinner, respectively. These observations reflected their job nature as they had to live outside during driving hours.

Mean comparison of BMI and WC according to frequency of meal taken per day was displayed in table 3. Results revealed that mean of BMI was not significantly (p-value > 0.05) different for the drivers taking their meals twice and thrice a day. However, the mean WC was significantly high (i.e., Two times/day vs. Three times/day, respectively; 97.83 ± 1.33 vs. 91.30 ± 0.92, respectively) for the drivers, having their meals twice a day.

**Discussion**

Schedule working hours, adequate dietary pattern and proper sleep, all make up healthy habits for professional workers. Unfortunately, all these characteristics are not very common among transit professionals particularly among drivers in Pakistan because of their erratic work demands and busy schedule. Moreover, majority of drivers are illiterate and have no knowledge about their healthy diet plan. In Pakistan, this was the first study in driver’s community to see the relationship between dietary intake patterns with obesity. We therefore, try to compare our results with foreign research.

In our study, overweight and obesity prevalence among drivers was found to be 54.3% and 11.2%, respectively which ratifies that obesity in this community is a serious health problem. Our study results are in line with Indian’s drivers study, showed 43.3% of drivers were either overweight or obese. 

Some more previous studies with drivers of different countries also reported the same results. When eating habits are focused, the professional drivers usually do not act upon healthy eating habits as they frequently take their foods from restaurant or hotel, during routes of travel and meals outside home, having a high calories and low nutritional which may turn this occupational community to general or central obesity. In our study, the dietary pattern, in terms of food intake per day, was significantly associated with the general and central obesity. The results of many other studies for general
Table 2: Association Between Dietary Pattern and Obesity (n = 197)

| Subject Distribution | General obesity | Central obesity |
|----------------------|-----------------|-----------------|
|                      | Normal n (%)    | Overweight n (%)| Obese n (%) | WC ≥102 n (%) | WC <102 n (%) |
|                      | 68 (34.5)       | 107 (54.3)      | 22 (11.2)   | 40 (20.3)     | 157 (79.7)    |

Vehicle Type

|                      |                  |                  |
|----------------------|-----------------|-----------------|
| Loader vehicle (n = 76) | 34 (17.2)       | 35 (17.8)       |
| Public transport vehicle (n = 121) | 34 (17.3)       | 72 (36.5)       |

Chi-Square = 5.72 p-value = 0.05
Chi-Square = 9.41 p-value = 0.00

Meals taken per day

|                      |                  |                  |
|----------------------|-----------------|-----------------|
| Two time p/day (n = 66) | 23 (11.7)       | 30 (15.2)       |
| Three time p/day (n = 131) | 45 (22.8)       | 77 (39.1)       |

Chi-Square = 7.90 p-value = 0.01
Chi-Square = 8.13 p-value = 0.00

Breakfast taking status

|                      |                  |                  |
|----------------------|-----------------|-----------------|
| No eating breakfast (n = 07) | 03 (1.5)        | 02 (1.0)        |
| Home (n = 85)          | 20 (10.2)       | 52 (26.4)       |
| Restaurant/Hotel (n = 105) | 45 (22.8)       | 53 (26.9)       |

Chi-Square = 12.20 p-value = 0.01
Chi-Square = 6.75 p-value = 0.03

Lunch taking status

|                      |                  |                  |
|----------------------|-----------------|-----------------|
| No eating lunch (n = 43) | 11 (5.6)        | 25 (12.7)       |
| Home (n = 18)          | 05 (2.5)        | 08 (4.1)        |
| Restaurant/Hotel (n = 136) | 52 (26.4)       | 74 (37.6)       |

Chi-Square = 9.44 p-value = 0.05
Chi-Square = 6.49 p-value = 0.03

Dinner taking status

|                      |                  |                  |
|----------------------|-----------------|-----------------|
| No eating dinner (n = 19) | 11 (5.6)        | 04 (2.0)        |
| Home (n = 82)          | 17 (8.6)        | 56 (28.4)       |
| Restaurant/Hotel (n = 96) | 40 (20.3)       | 47 (23.9)       |

Chi-Square = 18.21 p-value = 0.00
Chi-Square = 8.71 p-value = 0.01

*(%) Percentages out of total (197)

Table 3: Comparison of Obesity Measurements w.r.t. Dietary Pattern

| Frequency of meal | Mean | SE  | t-statistic | d.f  | p-value* |
|-------------------|------|-----|-------------|------|----------|
| BMI (kg/m²)       |      |     |             |      |          |
| Two times/day (n = 66) | 25.69 | 0.57 | 0.49        | 195  | 0.62     |
| Three times/day (n = 131) | 25.38 | 0.34 |             |      |          |
| WC (cm)           |      |     |             |      |          |
| Two times/day (n = 66) | 97.83 | 1.33 | 4.08        | 195  | 0.00     |
| Three times/day (n = 131) | 91.30 | 0.92 |             |      |          |

*p-value by two-sample independent t-test.

population not specifically for drivers were very similar with our findings. These results were also consistent with many earlier reported studies about general public and professionals. Moreover, the dietary pattern showed that the professional drivers, eating meals twice a day had more risk of central obesity as compared to those who used to consume meals thrice a day. For a two-time meal schedule, some heavy and unbalanced foods are more likely to be consumed that may become a prime cause for central obesity.

Conclusion

In conclusion, our study with professional drivers reveals that dietary intake behaviour is associated with obesity and drivers need some serious attention about their dietary behaviour especially while dining outside their homes, because this may be a chief cause to have undesired weight gain and had a risk of metabolic complications. Furthermore, some programs should also be launched for the awareness of these professionals to promote lifestyle changes and to reduce the prevalence of obesity.
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