Risk Factors Associated to Obesity in Cycle-Taxi Drivers of Mexico City's Historic Downtown*

Factores de riesgo asociados a la obesidad en bicitaxistas del centro histórico de Ciudad de México

Fatores de risco associados à obesidade em bicitaxistas do centro histórico da Cidade do México

Luis David Berrones Sanz[a]
Universidad Autónoma de la Ciudad de México, México
ORCID: https://orcid.org/0000-0001-9740-8114

María Guadalupe de Dios Bravo
Universidad Autónoma de la Ciudad de México, México
ORCID: https://orcid.org/0000-0002-9754-835X

Exiquio Cesar González Peña
Tecnológico de Estudios Superiores de Coacalco, México
ORCID: https://orcid.org/0000-0002-7544-6248

Victoria Alejandra Muro Báez
Secretaría de Salud, México
ORCID: https://orcid.org/0000-0002-8299-3223

[a] Corresponding author. E-mail: luis.berrones@uacm.edu.mx

Abstract

From the perspective of social reproduction, the focus of this study is placed on the collective practice of diet in bike taxi drivers (or rickshaws) of Mexico City's historic downtown, analyzed as key element in a characteristic pathologic profile observed in health/disease conditions, particularly as the cause for overweight, obesity, dyslipidemias, and factors associated to metabolic syndrome. A descriptive, cross-sectional study was conducted with 110 (90.2%) drivers. A survey was used to collect data on diet habits, working conditions and lifestyle. Anthropometric measurements and blood samples were taken to analyze biochemical parameters in order to assess the subjects' health status and establish obesity-related risk factors. The results reveal that average daily soda consumption is 1.6 liters (54 fl. oz.), an equivalent of 629 kilocalories per day. Vegetables are consumed 3.1 times per week and 65.7 kilograms (145 pounds) of corn tortillas are consumed per year. Obesity is associated to the number of years a person has been driving a bike taxi [$\chi2(2, N = 99) = 6.747, p = 0.034$]. 69.1% is overweight or obese, 63.3% has hypertriglyceridemia and 49.1% meet three or more criteria to be diagnosed with metabolic syndrome according to the Adult Treatment Panel III (ATP III). Drivers' intake of sugary drinks and junk food is high, while recommended food intake like vegetables, fruits, legumes and white meat is low. Ongoing campaigns are recommended to promote healthy food intake, avoid sugary drinks intake and facilitate water consumption.

Keywords: obesity, dyslipidemias, metabolic syndrome, rickshaw, feeding, bike taxi drivers.

Resumen

Bajo la perspectiva de la reproducción social, este estudio se enfoca en la práctica colectiva de la dieta de los bicitaxistas del centro histórico de la Ciudad de México, siendo analizada como un elemento clave para el perfil patológico característico observado en las condiciones de salud/enfermedad, en particular como la causa del sobrepeso, obesidad, dislipidemias y factores asociados al síndrome metabólico. Se hizo un estudio descriptivo, transversal, con 110 bicitaxis (90.2%). Se hizo un sondeo para recolectar los datos sobre los hábitos alimenticios, condiciones laborales y estilo de vida. Se tomaron medidas antropométricas y muestras de sangre para analizar los parámetros bioquímicos con el fin de evaluar la condición de salud de los sujetos y establecer los factores de riesgo relacionados con la obesidad. Los resultados revelan que el consumo promedio diario bebidas gaseosas es de 1,6 litros (54 onzas líquidas, equivalentes a 629 kilocalorías diarias). Los vegetales se consumen 3,1 veces por semana y se consumen 65,7 kilogramos (145 libras) de tortillas de maíz al año. La obesidad está asociada al número de años que una persona lleva conduciendo un bicitaxi [$\chi2(2, N = 99) = 6,747; p = 0,034$]. El 69,1% tiene sobrepeso u obesidad, el 63,3% tiene hipertrigliceridemia y el 49,1% cumple con tres o más criterios para el diagnóstico del síndrome metabólico según el Panel III de tratamiento para adultos (ATP III). La ingesta de bebidas azucaradas y comida chatarra entre los bicitaxis es alta, mientras que la ingesta de comida recomendada como vegetales, frutas, legumbre y carnes blancas es baja. Se recomiendan campañas constantes para promover la ingesta de alimentos saludables, evitar el consumo de bebidas azucaradas y facilitar el consumo de agua.

Palabras clave: obesidad, dislipidemias, síndrome metabólico, bicitaxis, alimentación, bicitaxistas.

Resumo

Sob a perspectiva da reprodução social, este estudo foca-se na prática coletiva da dieta dos bicitaxistas do centro histórico da Cidade do México, sendo analisada como elemento chave para o perfil patológico característico observado nas condições de saúde/doença, em particular como a causa do sobrepeso, obesidade, dislipidemias e fatores associados à síndrome metabólica. Estudo descritivo, transversal, com 110 bicitaxis (90.2%). Foi feita uma indagação para coletar dados sobre hábitos alimentares, condições laborais e estilo de vida. Realizaram-se medidas antropométricas e amostras de sangue para analisar os parâmetros bioquímicos a fim de avaliar a condição de saúde dos sujeitos e estabelecer os fatores de risco relacionados com obesidade. Os resultados revelam que o consumo médio diário de refrigerantes é de 1,6 litros (54 onças líquidas, equivalentes a 629 quilocalorias diárias). Os vegetais são consumidos 3,1 vezes por semana e consomem 65,7 quilogramas (145 libras) de tortilhas de milho por ano. A obesidade está associada ao número de anos que uma pessoa leva dirigindo um bicitaxi [$\chi2(2, N = 99) = 6,747; p = 0,034$]. 69,1% apresenta sobrepeso ou obesidade, 63,3% apresenta hipertrigliceridemia e 49,1% atende a três ou mais critérios para o diagnóstico da síndrome metabólica de acordo com o Painel III de tratamento para adultos (ATP III). A ingesta de bebidas açucaradas e rações entre os bicitaxis é alta, enquanto que a ingesta de comida recomendada como vegetais, frutas, legumes e carnes brancas é baixa. Recomendam-se campanhas constantes para promover a ingestão de alimentos saudáveis, evitar o consumo de bebidas açucaradas e facilitar o consumo de agua.

Palavras-chave: obesidade, dislipidemias, síndrome metabólica, bicitaxis, alimentação, bicitaxistas.

Introduction

The health/illness profile of a workgroup is determined by material living conditions and the way of organization that establishes the level of development of a society (1). Thus, from the social and historical perspective of the health/disease process, the Social Reproduction (SR) category explains how this process is distributed and determined differently in human groups (2). The specific forms of SR can be identified through everyday practices subjects carry out individually or collectively that constitute the movement of the reproduction of society as a whole (3). These specific forms of SR determine the living conditions of the subjects, the way they are organized into collectives, and with these, their lifestyles (4).

In the current lifestyles, work activities are sedentary and people have both social and family habits and customs that involve little physical activity. Also, lifestyles and eating habits have created an imbalance between the (nutrient) intake and (food) consumption of calories that lead to being overweight or obese. This increases the risk of ailments such as diabetes, hypertension, heart disease, a cerebrovascular accident, and certain types of cancer (5). Although these diseases have a strong genetic component, they are influenced by environmental, social, cultural, and economic factors (6).

The World Health Organization indicates for the global population over the age of 18.39% are overweight and 13% are obese (7) ; while in Mexico, the figures are 39.2% and 33.3% respectively ($n = 8275$) (8) . Furthermore, worldwide close to 422 million people have diabetes (9), 6.4 million of them are Mexicans (8); therefore, 9.4% of the adults in Mexico have been diagnosed with this disease (8).

In the case of professional drivers in Mexico, the proportion of overweight and obese individuals also indicates high levels of prevalence; and it has found: 28.7% of overweight and 17% of obesity in in motor taxi drivers ($n = 95$) (10) ; 41.6% and 44.7% in taxi drivers ($n = 260$) (11) and; 52.7% and 22.5% in truck and intercity bus drivers ($n = 4804$) (12). In addition, diverse epidemiological studies have shown that obesity and other risk factors, such as diabetes mellitus, hypertension, heart disease and acute myocardial infarction are higher in professional drivers than among individuals employed in other occupations (12, 13, 14, 15, 16, 17, 18, 19).

Nevertheless, despite the importance of the health of drivers in urban transportation systems, not only for the sake of workers' health and safety, but also for externalities and the large number of users of these systems, studies on the labor and health conditions of these groups have received relatively little attention compared to those of other groups of workers in Mexico (20). An example of this is that this type of study has not been carried out on cycle-taxi drivers (21).

Cycle-taxis known in other parts of the world as pedicabs, velotaxis, bike taxis, or Rickshaws, are vehicles used to provide individual taxi-like public transport service without a fixed route, combining human pedal traction with rechargeable battery energy. In Mexico, these vehicles are used in the downtown Historic Center of Mexico City and they have been in operation

since 2009. The 122 workers that operate these vehicles are members of a cooperative, so they form part of a workgroup inserted into a specific mode of production, with collective practices that create forms of social reproduction, living conditions and lifestyles that determine their pathological profile expressed in their health/disease conditions (22).

In this way, the practice to be examined in this study is the collective diet of cycle-taxi drivers, which is analyzed as a decisive factor in a characteristic pathology expressed in the heath conditions and diseases of this specific group, and especially as a cause for being overweight and for obesity.

For this reason, initially it was thought that cycle-taxis drivers have eating habits similar to the general population and, since they perform more physical activity due to the demands derived from their work process, this work group should have less problems of overweight and obesity, and therefore associated diseases, compared to the general population and other types of professional drivers. To prove these assertions, this study was carried out with the purpose of describing the eating habits, the prevalence of overweight and obesity is quantified, and the distribution of diseases in the drivers of the cycle-taxis of the of Mexico City's Historic Downtown.

To prove these assertions, this study was carried. In this, the eating habits are described, the prevalence of overweight and obesity is quantified, and the distribution of diseases in the drivers of the cycle-taxis of the of Mexico City's Historic Downtown. were analyzed.

Method

A descriptive study of a transversal cross-section was carried out on 110 workers, of a total of 122 that are part of the cooperative of cycle-taxi drivers in the Mexico City's Historic Downtown.

The data were obtained through a questionnaire and by taking anthropometric measurements and blood samples performed free-of-charge on all participants. Prior to this, the justification and objectives of the research were explained to the workers, as well as the procedures, risks, and possible discomfort, among other points, were included to ensure their informed consent in accordance with ethical principles in the Helsinki Declaration of 1975. The investigation was conducted according to the criteria set by established in article 100 of the Mexican General Health Law (23), so that the written informed consent signed by the workers was included. In addition, the project was endorsed by the research committee and sponsored by the Autonomous University of Mexico City (UACM).

The questionnaire had a section on nutrition that explored the frequency of the consumption of sweetened foods and beverages. For this part, the consumption frequency format of the

National Health and Nutrition Survey was used (24); with responses on a scale, which obtained a Cronbach's α (alpha) of 0.712.

For the anthropometric measurements, a scale with a stadiometer was used, along with a metric tape measure, a bioimpedance scale (Teraillon brand), and a pair of aneroid blood pressure gauges and stethoscopes to record height, weight, body fat percentage, hydric percentage, blood pressure, and pulse. In this way Body Mass Index (BMI) and Waist-Hip Ratio (WHR) were obtained and workers were classified into three groups: normal weight (BMI = [18.49-25]), overweight (BMI ≥ 25), and obese (BMI ≥ 30), based on the World Health Organization's BMI classification (7).

Blood samples (4.5 mL) were taken in the morning in four weekly sessions from an average of 28 participants who had fasted; later they were evaluated with a semiautomatic Spinlab brand Analyzer for clinical chemistry to obtain levels of total cholesterol, HDL cholesterol, LDL cholesterol, glucose, and uric acid in serum for each worker. The results were given personally and confidentially to each worker and in each case where risk values were detected, the worker was given orientation and recommendations by a health professional.

Blood samples, anthropometric measurements and blood pressure taking were obtained by health professionals -doctors and nurses- and according to the procedures and recommendations established in the Clinical Practice Guide for the Diagnosis and Treatment of Arterial Hypertension in the First Level of Care (25); and the Official Mexican Standards: NOM-007-SSA3-2011, for the organization and operation of clinical laboratories (26); NOM-008-SSA3-2017, For the comprehensive treatment of overweight and obesity (27); PROY-NOM-030-SSA2-2017, For the prevention, detection, diagnosis, treatment and control of systemic arterial hypertension (28); and NOM-015-SSA2-2010, for Prevention, treatment and control of diabetes mellitus (29).

The data were explored using SPSS software version 22. The continuous variables were presented with frequency, average, and standard deviation; and the categorical variables in number and percentage.

With this, two tables were made in which the crossing is made with the weight classification (normal, overweight and obesity). In the first one, variables related to working conditions are included -such as hours and days worked per week, and years of experience driving rickshaws-; eating habits -such as the consumption of soda or sugary beverages, and the numbers of times that they eat away from home-; and others such as the age group. While in the second table, are included biomarkers such as systolic and diastolic blood pressure, levels of triglyceride, cholesterol, and glucose, and waist circumference. For all these set of variables, independence tests were run using the chi-square test (χ^2-Test).

Finally, with a 5% level of significance, hypothesis tests were performed for differences in proportions. With this, it was contrasted (H_o: P_C-P_i = 0) if the proportions of overweight and obesity in Cycle-taxis (P_C) drivers are similar to those of the general population (P_G), or to other professional drivers, such as motorcycles (P_M), conventional taxis (P_T), or those of intercity transport (P_I).

Results

The age range of the cycle-taxi workers was between 19 and 64, with an average of 37 years of age. The majority (91%) are men and only 26% completed a secondary school education. In general, the work day is almost seven hours a day and six days a week. These workers have had an average of 3.6 years driving this type of vehicle and 41% have an average of 9.7 years of prior experience driving cycle-taxis.
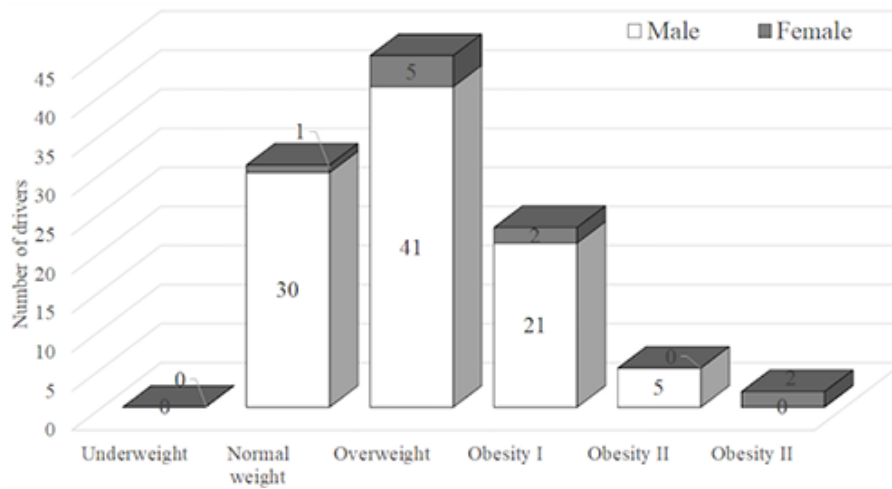
With regard to habits and subjective health, 16.2% of workers state they have some sort of disease, mainly diabetes and high blood pressure; although 73.1% indicate they have muscular-skeletal ailments, especially in the knees (63.4%), buttocks, or hip (32.1%), and in the upper back (30.4%). They sleep 7.5±1.06 hours per day, 50.5% smoke, 3% take drugs, and 46.3% do not get any physical activity beyond work.

With regard to eating habits, the daily diet includes an average of 1.16 liters (L) of soft drinks per day, at least one cup of milk and coffee, two pieces of sweetened bread, six corn tortillas (approximately 145 pounds of corn tortilla per year), and some type of sweet or salty snack between meals. Considering the composition of the food (30), beverages alone contribute 629 kilocalories (kcal), close to a quarter of the energy required for the calorie levels in a diet for the average age and physical activity of cycle-taxi drivers (2800 kcal); in addition, with sweetened bread products (446 kcal), corn tortillas (300 kcal), and chips (210 kcal), the consumption of calories is close to half the calories these workers should consume per day.

Commonly, the proportion of fruit and vegetables in their daily diet is extremely limited and are not consumed daily (3.1 times per week). As for proteins of animal origin, the consumption of high-fat red meat predominates; only a couple days per week is chicken consumed; and fish very sporadically (0.78 times per week). Egg consumption is a recurrent practice, for breakfast or lunch, although the majority (48.48%) only have coffee and bread for breakfast, or leftovers from the day before (36.36%), which generally include red meat, rice, beans, and tortillas.

As for Body Mass Index (BMI), 69.1% of the subjects were overweight or obese. Figure 1 shows the distribution of obesity according to Body Mass Index and according to the workers' sex. When it came to men, 42.3% were overweight and 26.8% were on the obesity scale. Of the ten women, all female personnel in the cooperative, participated in the study, nine of them were overweight or obese.

Figure 1. Classification of obesity based on Body Mass Index
own work.

As for age, in the 20 to 59-year-old bracket, workers who are overweight and obese predominate over those of normal weight, with a greater frequency (82%) for the group of workers between 40 and 49 years of age. Unlike other studies of drivers in Mexico (12), in this study no linear relationship was found between the drivers' age and BMI (correlation coefficient = 0.25) or any association in the chi-square test [χ^2(6, N = 107) = 10.143, p = 0.119].

However, despite the fact that in the chi-square test no dependence—in age [χ^2(4, N = 109) = 6.293, p = 0.178] or in other variables related to work conditions and food and health habits (described in Table 1)—was found with obesity and being overweight, there was indeed an association with the years spent driving cycle-taxis [χ^2(2, N = 99) = 6.747, p = 0.034].

When it comes to biomarkers, the proportions of workers with values considered to be anthropometric, physiological, or biochemical anomalies, are as follows: 49.1% have high blood pressure, 63.3% high triglyceride levels, 5% high overall cholesterol, and 18.6% high blood sugar levels. Furthermore, 49.1% have three or more of the criteria established by the Adult Treatment Panel (ATP III) for diagnosing metabolic syndrome (31). Here it is important to point out that in the prior survey, only 17.1% of the workers stated they had a disease, thus more than half the workers at risk (33% of the total) were unaware of the danger they were in. Therefore, it was necessary to detail their condition and treat their ailments to avoid health deterioration and further complications.

Table 1. Habits and labor conditions classified according
to obesity level based on Body Mass Index (BMI)

Variable	Normal weight		Overweight		Obesity		N		P-value[b]
	n	(%)[a]	*n*	(%)[a]	*n*	(%)[a]	*n*	(%)[a]	χ^2-Test
Hours worked per day									
<8	19	(19.2%)	35	(35.4%)	20	(20.2%)	74	(74.7%)	0.066
≥8	12	(12.1%)	6	(6.1%)	7	(7.1%)	25	(25.3%)	
Days worked per week									
≤6	20	(20.2%)	26	(26.3%)	15	(15.2%)	61	(61.6%)	0.746
7	11	(11.1%)	15	(15.2%)	12	(12.1%)	38	(38.4%)	
Years of experience driving Cycle-Taxis									
≤ 5	19	(19.4%)	15	(15.3%)	17	(17.3%)	51	(52%)	0.034*
> 5	11	(11.2%)	26	(26.5%)	10	(10.2%)	47	(48%)	
Perception of adequate food intake									
No	16	(15.1%)	24	(22.6%)	10	(9.4%)	50	(47.2%)	0.186
Yess	16	(15.1%)	20	(18.9%)	20	(18.9%)	56	(52.8%)	
Days per week meals eaten away from home									
0	6	(5.5%)	12	(10.9%)	5	(4.5%)	23	(20.9%)	0.339
1-3	4	(3.6%)	13	(11.8%)	8	(7.3%)	25	(22.7%)	
4-6	9	(8.2%)	5	(4.5%)	6	(5.5%)	20	(18.2%)	
7	15	(13.6%)	16	(14.5%)	11	(10%)	42	(38.2%)	
Days per week sugary drinks consumed									
0	11	(10%)	13	(11.8%)	11	(10%)	35	(31.8%)	0.933
1-3	10	(9.1%)	12	(10.9%)	6	(5.5%)	28	(25.5%)	
4-6	4	(3.6%)	8	(7.3%)	6	(5.5%)	18	(16.4%)	
7	9	(8.2%)	13	(11.8%)	7	(6.4%)	29	(26.4%)	
Days per week sodas consumed									
0	10	(9.1%)	12	(10.9%)	7	(6.4%)	29	(26.4%)	0.885
1-3	14	(12.7%)	15	(13.6%)	9	(8.2%)	38	(34.5%)	
4-6	5	(4.5%)	8	(7.3%)	6	(5.5%)	19	(17.3%)	
7	5	(4.5%)	11	(10%)	8	(7.3%)	24	(21.8%)	
Age (years)									
≤29	13	(11.9%)	11	(10.1%)	7	(6.4%)	31	(28.4%)	0.178
30-39	11	(10.1%)	10	(9.2%)	9	(8.3%)	30	(27.5%)	
≥40	9	(8.3%)	25	(22.9%)	14	(12.8%)	48	(44%)	

N = The number of non-missing values in the sample. [a]Proportion to the total. [b]Chi-squared ($\chi2$) test.
*Rejects the null hypothesis of independence.

Source: own work.

Finally, of the biomarkers, an association with obesity and overweight was found only for waist circumference [χ^2(2, $N = 110$) = 55.434, $p < 0.001$] and for systolic [χ^2(2, $N = 110$) = 8.212, $p = 0.016$] and diastolic blood pressure [χ^2(2, $N = 110$) = 7.455, $p = 0.024$]. For the rest of the

variables (Table 2) the p-value was greater than 5% (*p*-value > 0.05), so it was not possible to reject the idea the variables may be independent.

Table 2. Anthropometric and blood chemistry data
according to obesity level based on Body Mass Index

Variable	Normal weight	Overweight	Obesity	N
	n (M±SD)	n (M±SD)	n (M±SD)	n (M±SD)
Waist Circumference (cm)				
<94	28 (82.5±5)	9 (85.4±8.2)	0 (0±0)	37 (83.2±5.9)
≥94	6 (95.8±5)	37 (96.1±4.7)	30 (104.2±5.5)	73 (99.4±6.4)
Systolic Blood Pressure (mmHg)				
<130	24 (116.2±11.8)	21 (114.5±9.1)	11 (118.9±8.6)	56 (116.1±10.2)
≥130	10 (145.1±8.6)	25 (142.2±16.5)	19 (150.4±16.4)	54 (145.6±15.5)
Diastolic Blood Pressure (mmHg)				
<85	26 (73.6±6.4)	26 (78.6±4.4)	13 (78.3±4)	65 (76.5±5.7)
≥85	8 (95.1±10.9)	20 (93.3±8.7)	17 (95.9±12.4)	45 (94.6±10.4)
Triglycerides (mg/dL)				
≤150	16 (120.8±19)	15 (121.9±22)	5 (125.2±16.5)	36 (121.9±19.5)
>150	16 (239.3±106)	28 (299.1±126.1)	18 (252.5±63.5)	62 (270.2±107.9)
Total cholesterol (mg/dL)				
≤240	30 (179.2±26.1)	40 (189.9±23)	25 (184.9±34.8)	95 (185.2±27.6)
>240	1	3 (274.3±19.4)	1	5 (273.2±13.9)
Blood Glucose (mg/dL)				
≤100	25 (76.1±15.6)	38 (79.2±13.8)	20 (73.2±18.4)	83 (76.8±15.5)
>100	7 (139.9±60.3)	6 (132.5±33.3)	6 (108.8±4.3)	19 (127.7±41.4)
Uric acid (mg/dL)				
<94	29 (5.4±1)	39 (6.2±0.8)	25 (6.0±1)	93 (5.9±1)
≥94	5 (8.3±0.7)	7 (8.5±0.8)	4 (9.1±1)	16 (8.6±0.8)

N = The number of non-missing values in the sample. M = Sample Mean. SD = Standard Deviation. Cm = Centimeters. mmHg = Millimeters of Mercury. mg/dL= Milligrams per Deciliter.

Source: own work.

Discussion

One of the initial assumptions was cycle-taxi drivers, given the physical activity implied by their work, would generally not have problems of being overweight or obese (O/O), or that they would have lower ratios than other groups of drivers. However, the percentage of cycle-taxi drivers beyond the ideal weight was on the order of 69.1%, a figure close to those published by the National Health and Nutrition Survey (8), which indicates that 72.5% of the adult population in Mexico is overweight or obese. Therefore, statistically significant evidence was lacking [P_C (69.1%)- P_G (72.5%) = -0.034, p = 0.44] to assume that the study group was any different from the adult population in Mexico.

For the prevalence of O/O in comparison to other groups of drivers in Mexico (10, 11, 12) , in hypothesis testing for proportions (Ho: PC-Pi = 0), differences were found when compared to drivers of motorcycle-taxis [P_C (69.1%)-P_M (45.2%) = 0.238, $p < 0.01$] and with drivers of conventional taxis [P_C (69.1%)-P_T (86.2%) = -0.17, $p < 0.01$], and similarities were seen with drivers of intercity bus drivers [P_C (69.1%)-P_I (75.2%) = -0.06, $p = 0.171$]. Of course, labor conditions and work processes are extremely different for each form of transport, above all intercity buses. Likewise, it can be inferred that the differences between modes of urban transport are owed principally to work days, the time drivers remain seated, and the physical effort they exert. It is also necessary to explore and compare their eating habits and lifestyles, which have not yet been studied for these groups of workers in Mexico.

Another important factor is physical activity outside the workplace, given that only 14.4% of the general population in Mexico is catalogued as inactive (8). In the group of cycle-taxi drivers, 46.3% do not do any physical activity beyond their work, thus it can be stated that cycle-taxi drivers do less physical activity outside of work than the general population in Mexico [P_C (46.3%)-P_G (14.4%)≤0.3196, p < 0.01]. However, working on cycle-taxis implies that a part of the time in riding, at least 30% of the time, they have to use the pedals to move the vehicle, which implies aerobic activity, and with this, they accumulate more than the 150 minutes of exercise per week recommended by the World Health Organization (32).

The activity of cycle-taxi drivers is a vigorous physical activity (≥300 min/wk), so the energy consumption for persons of normal weight (BMI ≥18.5 y ≤ 24.9 kg/m²) is between 25 to 40 kcal per kilo of weight per day. For cycle-taxi drivers, the energy consumption, considering their physical activity, age, and average weight, is close to 2800 kcal per day.

Likewise, with regard to eating habits, among cycle-taxi drivers, the consumption of corn tortillas, which is calculated at 65.7 kilos (145 pounds) of tortillas per person annually, is higher than the 56.7 kg of the general population in Mexico (33); just as the consumption of soft drinks of 1.16 liters per day, compared to the national average of 0.45 liters per day (34) . Thus, whereas for an average Mexican, 20% of the calories consumed comes from beverages with added sugar, whole milk, and fruit juice (35), for cycle-taxi drivers, these beverages account for a quarter of the energy they consume per day, which increases the risk of being overweight or obese, because sweetened beverages are low in fiber, do not quench thirst, and have a smaller quantity of micronutrients than solid food sources.

In conclusion, the collective group of workers includes in its daily diet a high consumption of sugary beverages, junk food, and low proportions of the consumption of recommended foods, such as vegetables, fruit, legumes, and white meat (poultry and fish), so dietary habits related to overweight and obesity put the drivers' health at risk, primarily for diseases such as diabetes, hypertension, and metabolic syndrome. It is important to mention these dietary habits

are influenced by the obesogenic environment and habits and customs that cycle-taxi drivers are exposed to in their place of work.

On the one hand, it is recommended that workshops be organized to inform the labor group of the nutritional risks their current consumption habits represent, to offer alternatives for a balanced diet, and to raise awareness among drivers concerning diet and obesity. On the other hand, in addition to creating a permanent nutritional campaign, the management of the cycle-taxi cooperative should promote the consumption of healthy foods and the elimination of sugary beverages in their daily diet. To reach this objective, it should, for instance, make an agreement with the vendors that enter the facilities to sell appropriate foods and to avoid the sale of sugary beverages. Similarly, to facilitate the consumption of water, they should install drinking fountains in the facilities. Finally, they should track the workers that have been identified with risk factors and who are not attending to any of their potential ailments.

Acknowledgments

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Notes

*   Research article