Body composition and relationship with the level of physical activity of taxi drivers and postmen of João Pessoa – PB

Original Article

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ABSTRACT: Introduction: The objective of this study was to analyze the corporal composition and relationship with the level of physical activity of taxi drivers and postmen of João Pessoa - PB. Materials and Methods: were selected in non-probabilistic way 53 postmen (age 38.3±8.9 years) and 52 taxi drivers (mean age of 44.0±11.9 years). The instruments used for the collection of data were: balances, estadiometer and anthropometric stares to measure body mass, stature and perimeters, respectively. For evaluation of the corporal composition were adopted the Body Mass Index (BMI), Circumference Waist and Hip Proportion (PCCQ) and the fat percentage (% fat) protocol of Penroe, Nelson and Fisher. The level of physical activity was analyzed by IPAQ in the short version. The analytical plan used SPSS software version 16.0 for descriptive analysis and inferential with established significance in 95% (p<0.05).

Results: The taxi drivers showed a profile for the overweight (28.7±4.9kg.m\textsuperscript{-2}), abdominal fat in high risk level (0.95±0.10) and high % fat (29.6±5.6%); the postmen presented euthrophy (24.4±3.8kg.m\textsuperscript{-2}); low risk of abdominal obesity (0.91±0.06); and satisfactory % fat (20.2±9.9%). In relation to the pattern of physical activity, all of the postmen were classified as assets while the taxi drivers, 55.8% of the total are sedentary, 25.0% insufficiently assets and 19.2% active. Discussion: When relating the corporal composition of postmen and taxi drivers with the levels of physical activities practiced by those professionals, it can be observed that, while the postmen showed an appropriate pattern to the health, originated by their dynamic and active function of occupation, the taxi drivers for time, presented a precarious nutritional status, fruit of a sedentary profile and insufficiently activity, characteristic of this profession.

Keywords: body composition, physical activity, sedentary.

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The corporal composition is one of the great challenges of the Health area in this beginning of century, suffering alterations, not only with the age progression, but also for the disuse of the body, that is to say, with the physical inactivity, being this profile mentioned as one of the most frequent problems of this century and that predispose the individual to the obesity, that is a serious problem of public health and of relevant importance. The obesity, and the consequent overweight, components of the body composition, is characterized as the organic dysfunction that has most presented an increase in its numbers. This way, the obesity is happening from a parallel way to the progressive decrease of the energy expenditure in working, entertainment, in the execution of household chores and due to concentration of mass fat, several other diseases can relapse on other undesirable habits to the life quality. Among some occupational activities, it is known that the taxi drivers’ profession is one with the most health-prone risks. Working statically inside a car most of the time, predisposes to the increase, not only of the total fat as well as of the located fat. With the increase of the concentration of mass fat, several other diseases can relapse on the professional. Besides, other worsening is the stress caused by the chaotic traffic and the risks generated by the profession, conditions that also minimize the quality of these professionals’ life.

A professional activity that seems to present characteristics differentiated to taxi driver’s function is the one of postman, that gets to walk about 5 hours in that function per day of work. The possibility of the occurrence of diseases related to the corporal fat in these individuals, in theory, are very inferior in relation to workers that work more. This way, the postmen have a different evolution from the taxi drivers, presenting an increase in the scores with the passing years, for they have a constant activity, in other words, with a wide work flow and being constantly moving, the profession exercised through the life can contribute for the development of syndromes and pathologies, especially when the individual doesn’t have the habit of practicing physical activities. In that sense, it can be noticed that some professional activities present characteristics related to the sedentarism, besides other undesirable habits to the life quality. Among some occupational activities, it is known that the taxi drivers’ profession is one with the most health-prone risks. Working statically inside a car most of the time, predisposes to the increase, not only of the total fat as well as of the located fat. With the increase of the concentration of mass fat, several other diseases can relapse on the professional. Besides, other worsening is the stress caused by the chaotic traffic and the risks generated by the profession, conditions that also minimize the quality of these professionals’ life.

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The sedentarism present in several professions is one of the main risk factors of the unleashing of non-transmitting chronic diseases. This way, the profession exercised through the life can contribute for the development of syndromes and pathologies, especially when the individual doesn’t have the habit of practicing physical activities. In that sense, it can be noticed that some professional activities present characteristics related to the sedentarism, besides other undesirable habits to the life quality. Among some occupational activities, it is known that the taxi drivers’ profession is one with the most health-prone risks. Working statically inside a car most of the time, predisposes to the increase, not only of the total fat as well as of the located fat. With the increase of the concentration of mass fat, several other diseases can relapse on the professional. Besides, other worsening is the stress caused by the chaotic traffic and the risks generated by the profession, conditions that also minimize the quality of these professionals’ life.
the sedentarism in their profession is not so evident, for the daily walkings during the deliveries of the letters. In this context, due to the workweek in which one keeps hours sat down at the steering wheel, the taxi driver is susceptible to the those diseases, in function of the accumulation of fat that can be general and/or located. All this, unassuming that that profession is an example of a work area that disturbs or even avoid that the individual have a healthy and balanced feeding. On the other hand, a profession like of a postman’s, in that, differently of taxi drivers, they walk hours and hours when they finish delivering the letters, it is supposed that they keep in a physical condition in that their body composition be always satisfactory. Before the above mentioned is that it is justified by the present study, that was accomplished with the objective of analyzing the taxi drivers’ and postmen’s body composition of the city of João Pessoa - PB and relationship of the study with the level of physical activity practiced by those professionals.

MATERIALS AND METHODS

Characterization of the research
The present study is characterized like a traverse cut, due to the determination of all of the parameters are accomplished at once, without any attendance period, that is to say, in a certain point of the time. In this design, the researcher delimits a sample of the population and evaluates all the variables inside a sampling scenery. The study was developed inside a correlational descriptive model by its thoroughly usage in the social sciences and health. In this outline, the values of the discoveries are based on the premise that the problems can be resolved and the practices gotten better through observation, analysis and objective and complete description, besides examining the relationships between two or more variables. The approach of the work was epidemic and predominantly in a quantitative basis.

Sample and place of the study
53 postmen (age 38.3 ± 8.9 years) and 52 taxi drivers (age 44.0 ± 11.9 years), all male gender. It is important to stand out that all the participant individuals of the sample had experience in the respective areas of performance (expressed information). The study was realized in the companies Radio Taxi and in two branches of the Centro de Distribuição dos Correios e Telégrafos, companies located in the city of João Pessoa - PB.

Anthropometrical Measures and Body Composition
To measure the corporeal mass, a Filizola anthropometrical scale personal model was used (capacity for 180kg and division of 100/100g). In the action of weighting, the professional was positioned in the center of the scale, barefoot, erect, with the glance in a fixed point in front of him/her and in front of the measure scale. For the measure of the height, a stadiometer like a measure tape from the brand Seca was used, with 200cm of length, with division scale in millimeters. The measure was just made, with a barefoot professional, in anatomical position - fallen arms along the body, with the hands in supine position, feet together and pointing forward - and with the pelvic, scapular and occipital areas leaned in the sloping stem of the measurement instrument. The head was positioned in function of the Plan of Frankfurt.

Body Mass Index (IMC)
Through the equationing of the division of the body mass (in kilograms) by the height in root (in meters), the nutritional state was analyzed through IMC, being followed the classification of the World Health Organization.

Circumferences
An anthropometrical ribbon from Mabis, model Gulick in fiberglass, with 150cm of length and graduate in millimeters was used, for evaluation of the perimeters of the waist, abdomen, hip and fist. A measure was just made of each one of the circumferences, with the professionals in anatomical position, in front of the evaluator and with the legs lightly moved away. The standardization followed individualized recommendations for each measure point, in agreement with the specialized literature.

Proportion of the waist and hip circumference (PCCQ)
The regional distribution of the corporal fat was outlined by PCCQ (proportion between the circumference of the waist and the hip). The cut points, to evaluate the risks to the health, followed the established classification pattern for Bray & Gray.

Fat percentage (% G)
Starting from the equations proposed by Penroe, Nelson & Fisher (1985) and Coté & Wilmore, was estimated after the taken circumferential measurements of the fist and abdomen, according to the description mentioned below by Fernandes Filho:

1) LBM is calculated (in kg) - (Cote and Wilmore):
2) Soon afterwards the is calculated the % G by according to the equation,

\[
\% G = \left(1 - \frac{LBM}{PC}\right) \times 100
\]

where
- LBM = thin body mass (kg)
- PC = body weight(kg)
- EST = height (cm)
- CA = circumference of the abdomen (cm)
- CP = circumference of the fist (cm)

Level of Physical Activity
The instrument used to determine the level of physical activity was the International Questionnaire of Physical Activity (IPAQ) in the short version, developed by the World Health Organization and validated in Brazil by the Center of Studies of the Laboratory of Physical fitness of São Caetano do Sul (CELAFISCS). This instrument is composed by 6 subjects related to the frequency and duration of the realization of moderate, vigorous and walking physical activities that the person accomplished last week. The questionnaire was applied in the researchers’ presence - which explained the procedures in full detail to completion of the instrument. The subjects were classified in: sedentary, insufficiently active, active and very active.
Table 1 – Distribution of average values, minimum, maximum, standard deviation and statistical significance

<table>
<thead>
<tr>
<th>Anthropometer</th>
<th>Taxi Drivers (n=52)</th>
<th>Postmen (n=53)</th>
<th>Test “t” and significance α=0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>average ± sd</td>
<td>min</td>
<td>max</td>
</tr>
<tr>
<td>age (years)</td>
<td>44.05±11.96</td>
<td>26</td>
<td>68</td>
</tr>
<tr>
<td>Body mass (kg)</td>
<td>83.04±15.20</td>
<td>53.50</td>
<td>113.40</td>
</tr>
<tr>
<td>height (cm)</td>
<td>169.8±7.31</td>
<td>155.0</td>
<td>188.0</td>
</tr>
<tr>
<td>BMIkg/m2)</td>
<td>28.73±4.94</td>
<td>20.27</td>
<td>38.33</td>
</tr>
<tr>
<td>PCCQ</td>
<td>0.95±0.10</td>
<td>0.61</td>
<td>1.20</td>
</tr>
<tr>
<td>%F</td>
<td>29.65 ± 8.22</td>
<td>5.58</td>
<td>49.17</td>
</tr>
</tbody>
</table>

*p<0.05 (significant).

Table 2 – Relation to the IBM medical values and %F with the respective referential values of taxi drivers and postmen from João Pessoa (PB)

<table>
<thead>
<tr>
<th>Body composition</th>
<th>Taxi drivers (n=52)</th>
<th>Postmen (n=53)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>average</td>
<td>reference*</td>
</tr>
<tr>
<td>BMI</td>
<td>28.7</td>
<td>25 ≤ BMI &lt; 30</td>
</tr>
<tr>
<td>PCCQ</td>
<td>0.95</td>
<td>High Risk</td>
</tr>
<tr>
<td>%F</td>
<td>29.6</td>
<td>22 to 27</td>
</tr>
</tbody>
</table>

*source: Foss & Keteyian23

Procedures for the realization of the research

The present study presented three different moments: firstly a contact kept with the directors of the companies of Correio (Post office) and Radio Taxi, with the objective of explaining the relevance of the study in those companies and, through an occupation, to obtain necessary authorization for the realization of the research. In a second moment, was made a contact with the taxi drivers and postmen professionals, the ones which, voluntarily accepted to participate in the research, signing like this, in full, an Informed Consent Form according to the norms for accomplishment of Research in Human beings and the criteria of Ethics in Research - Resolution 196/96. In a third and last moment, in days and hours established, the anthropometrical measures and the application of the questionnaire of physical activities were made, for obtaining the information on the body composition and level of physical activity. The objective of the study was explained, and that the data would be under the researchers’ responsibility for processing and analysis of these, being shown to the public only the global result of the research. For the accomplishment of the anthropometrical measures and of the questional application of physical activities, a team composed by two academics and a teacher of the Centro Acadêmico de João Pessoa – UNIPÊ was structured. A training was previously realized, in which was presented and discussed with the team the collection material, which included the protocol paper, structured questionnaire and equipment of anthropometrical measurement.

Data analysis

The obtained data were submitted to statistical analysis, to which the Statistical Package for Social Sciences (SPSS), version 16.0 for Windows was used. The Analytical plan used descriptive analysis for mean, minimum and maximum values and standard deviation and inferences through the t-test Student to investigate differences between the means. The established level of confidence was 95%, considering p<0.05 for the nullity hypothesis.

RESULTS

As it is verified in the Table 1, there was a significant difference in all the anthropometrical variables analyzed between the taxi drivers and postmen (p<0.05).

The Table 2 displays the variables of the body composition, where is observed that the postmen presented, on average, appropriate values to the health, differently of the taxi drivers, whose values are above what it is prescribed for a good health.

In the Figure 1, is observed that 80.8% of the taxi drivers are idle (insufficiently active/sedentary) condition contrary to their pairs postmen.

DISCUSSION

According to an analysis in the main bases of scientific newspapers, it is believed that the present work appears as a leader in the epidemiologic professional research and with such sensitive peculiarities in their professional activities, mainly in the regional extent, being like this, one of the difficulties found by the authors was a recognized referential impact, mainly in the Northeast Area, as most of the publications on the determinant of the lifestyle is concentrated in the South and Southeast of Brazil. In spite of the recognized limitations and peculiar to the traverse studies, the methodology here described aimed at the contemplation of an intern validity,
reducing the probability of systematic mistakes and elevating the reliability of the published information.

Concerning the evaluated anthropometer, a significant difference was observed between the professionals, in what regards the body mass and the height, being this relationship also associated to the values of the IMC found. The observed nutritional state, inter-groups was reflex, probably, due to the activity type that each one exercises in his/her habitual work routine. The variables analyzed in the postmen showed better values in the body composition. It is believed that this performance is a response to a day of work with many walkings, condition that, probably, selected those individuals in a better average in the corporal mass as “normal”. That situation is different from the taxi drivers, which present a quite high work load, with approximate average rate of 13 daily hours (referred information), where the same ones spend most of their time sat down or in situations of little energetic waste. This fact seems to be one of the possible reasons for the excess of corporal weight in these professionals, characteristic mentioned by other scientists and epidemiologists. The difference of the statistical point of view in relation to the located fat of the android type, was one more worsening fact in this context, because this type of fat is a predictor of stronger cardiovascular disease than the total body fat.

A study realized by Angels & Mendes, aiming at the evaluation of the health of 63 vigilant of a company of transport of values and multinational safety, analyzing instruments to measure physical activity and obesity, they found present obesity values in all the individuals, although most of those individuals has been classified as active through the IPAQ long version. These data contradict the participant postmen’s of the present profile work, that actives were physically active and less exposed to the problems of the overweight and obesity. Another quite important datum in the results of this research was the difference between the professionals, in what concerns to the percentage of medium fat, where it was verified in the postmen a desirable index for the health. Opposed profile showed the taxi drivers in the classification of bordering obesity, fact that that comes to provoke in those professionals the appearance of several degenerative diseases, including eminent disturbances like the metabolic syndrome.

In relation to the determination of the level of physical activity, was verified that all the researched postmen were classified as active, fact that explains the satisfactory body composition of these individuals. On the other hand, the level of the researched physical activity of the taxi drivers classified 80.8% as sedentary and insufficiently active, given that, possibly, contemplated in the high risk indexes and in the obesity of these professionals.

The low levels of physical activity presented by the taxi drivers were similar to the percentage published in a study realized with individuals from 20 to 69 years, residents in Pelotas, in Rio Grande do Sul, that pointed for 80.7% of physical inactivity, superior index to the 68.1% found in workers of the industry of the state of Santa Catarina, published by Barros & Nahas.

The percentage of taxi drivers considered active, possibly is due to the lifestyle that those professionals adopted in concomitance with the exercised activity, as well as to healthy life habits adopted in other phases of the life, as in the adolescence, that a lot of times are taken along the life, independent of the exercised professional activity. In spite of important factors determinant they have not been investigated in the present work, such as socioeconomic factors, genetic inheritance, political conceptions and other factors that can influence in the way of life, it is believed that the data here presented are appropriate and they will make possible a scientific basis for other studies about epidemiology of the physical activity and the process of health and morbimortality of professionals of several areas.

When relating the taxi drivers’ body composition and postmen with the levels of physical activity practiced by those professionals, can be observed that, while the postmen presented an appropriate body composition to the health, originating from a dynamic and active function of their occupation, the taxi drivers then showed a precarious nutritional status, fruit of a sedentary profile and insufficiently active, characteristic of their profession. Besides, the investigated taxi drivers were shown having overweight, centralized obesity and cardiovascular risk, according to the values above the normality patterns in the anthropometrical diagnosis, condition that was not evidenced in the postmen. Such discoveries suggest that the active lifestyle in the occupational activities comes as an excellent protection factor for the maintenance of the health and improvement of the life quality.

Therefore, it is recommended in order to help to optimize the professionals’ health here with the same characteristics of the researched, that the authorities that work with the public and collective health, elaborate actions addressed to health and the quality of the professionals’ life whose professions have a laboral, hipokinetik and static character. New studies on epidemiology of the physical activity are pertinent and necessary, involving more representative samples and with a larger number of explanatory variables, allowing a larger elucidation of the binomial "physical

**Figure 1** – Percentual distribution of physical activity’s level of classification of taxi drivers and postmen from João Pessoa (PB)
REFERENCES


Fit Perf J, Rio de Janeiro, 1, 25, Jan/Feb 2008