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Professional article

EPIDEMIOLOGY OF OVERWEIGHT AND OBESITY OF TRAITORS OF THE MULTIMODAL FREIGHT MANAGEMENT OFFICE OF THE CITY PROVINCE OF KINSHASA

Kusuayi Mabele Godefroid,[1] Nkiama Ekisawa Constant,[1] Bongo Nzeloka Jolie,[1] Christophe Delecluse,[2] Lepira Bompeka François[3]

[1] Kinesiology service, Physical Medicine and Rehabilitation, University of Kinshasa, Republic Democratic of Congo
[2] Faculty of movement and Rehabilitation sciences, Departement of movement science K.U. Leuven, Belgique
[3] Nephrology service, Internal Medicine, University of Kinshasa, Republic Democratic of Congo

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Abstract: **Objective:** To determine the prevalence of overweight and obesity in the workplace. Methods: We conducted a cross-sectional study with 210 workers of which 119 male (56.7%) and 91 female (43.3%) selected in a simple random manner in a company in the city of Kinshasa province between November 2013 to January 2014. Overweight was determined by workers with a body mass index between 25 and 29.9 kg/m^2 and obesity by those with a body mass index ≥ 30 kg/m^2. **Results:** This study found a prevalence of 23.8% of overweight workers and 48.1% of workers suffering from obesity with predominance in women (65.5% in men vs. 80.2% in women, $p < 0.014$). The frequency of risk factors associated with obesity increased with the increase in weight status of BMI ($p < 0.001$). **Conclusion:** Obesity is a common pathology in the workplace and hypertension is the main modifiable risk factor. Sedentarity is the main determinant of overweight and obesity. Obesity is a public health problem in the workplace in the city of Kinshasa because of the command and collaboration frameworks are most affected.

Key words: overweight, obesity, associated risk factors, work environment.

INTRODUCTION

In the history of mankind, physical activity was essential to the survival of the species because it was necessary for foraging. Until the first half of the nineteenth century, the main daily occupations of man were characterized by a great physical activity: hunting, earthwork, handicrafts, etc. The human being did not just survive, he progressed until the arrival of the automobile, television, video games and internet (1, 2).

Technical progress has especially reduced opportunities for physical activity in the workplace. It is a fact that many employees today spend most of their work time sitting in front of the computer or watching television (3, 4).

Physical inactivity and sedentary behavior are two different and independent dimensions of movement behavior, respectively associated favorably and unfavorably with health status (5, 6). The World Health Organization (WHO), based on observations from around the world, shows that physical inactivity is responsible for two million deaths each year. Death rates for non-communicable diseases increase with body mass and more significantly with obesity (body mass index ≥ 30) (6). According to the same organization, the burden of overweight and obesity is growing so rapidly in Africa that these pandemics have become a public health problem throughout the African region that deserves study (6). Obesity affects 30% of adults, or 44 million Mexicans, and 40% are overweight (7). In 2002, China experienced a significant increase in obesity (2.6% of the population with a BMI ≥ 30) and overweight in general (14.7% of the population had a BMI ≥ 25), which affects about 215 million Chinese people (7). The 2008 figures confirmed the sharp rise in obesity in China: 90 million Chinese were obese and 200 million overweight. In the poorest countries, obesity is socially valued. For example, in Mauritania, girls of marriageable age are fattened to be more attractive and maximize their chances of finding a spouse. Unlike de-

veloped countries, it is about affluent populations, and is therefore a sign of success and wealth. Obesity, a multifactorial disease, is now considered a pandemic characterized by a metabolic disorder resulting from an accumulation of excess fat in the body and whose consequences can be harmful to health. It is a progressive chronic disease. It constitutes a serious risk factor that compromises the psychosocial functioning and the quality of life of patients who suffer from it (7). The prevalence overweight and obesity among Kinshasa workers is not very well known. It is to fill this gap that the present study was undertaken in a Multimodal Transport company in the Democratic Republic of Congo, in this case the Office of Management of Multimodal Freight, OGEFREM in acronym.

METHODS

Nature and period of study

We opted for the descriptive method and conducted a cross-sectional study that determined the prevalence of overweight and obesity among workers during a period from 2th November 2013 to 2th January 2014.

Framework of the study

This study took place at the Office of Management of Multimodal Freight, OGEFREM in acronym, of the city of Kinshasa, Democratic Republic of Congo.

Sample of the study

Our target population consisted of 400 male and female workers, aged 18 and over regardless of their rank and function. Our study sample was 210 randomly selected workers including 119 male (56.7%) and 91 (43.3%) female employees. Inclusion criteria included having freely agreed to participate in study, being between 18 and 59 years of age, being in apparent good health and working in one of the company's directorates for at least one year of service. Excluded were any worker who did not meet the inclusion criteria above.

Variables of the study

The morphological variables, level of physical activity and physiology used were as follows:

- Size (cm): It was rated with a SECA brand toe in lightly clad workers, was measured standing, heeled joints, head positioned so that the line of sight is perpendicular to the body,

- Weight (kg): It was measured using a calibrated SEC dry weight scale in kilograms (kg) to 100 g near him, the teenager stood on the scale, head up, looking towards the horizon with an undergarment. The body mass index (BMI) of workers was calculated using the following formula: BMI: mass (kg)/height (m). According to the World Health Organization (WHO) and the International Working Group on Obesity (8,9), overweight was defined for BMI values between 25 and 29.9 kg/m^2 and the obesity for the value greater than equal to 30 kg/m^2;

- Physical inactivity was measured by the number of steps per day ≤ 4999 recorded using an OMERON pedometer (10). The quality of life was assessed by the "Medical Outcome Study Short Form 36" (MOS SF-36) or "Short Form 36" (SF-36) questionnaire, is a generic questionnaire, robust, reliable, acceptable for the long-term. term measurement of quality of life, and validated in French. It contains 36 questions addressed to 9 dimensions: physical abilities, limitations related to the physical state, breads, perceived health, then vitality, relational life, psychic health, and finally evolution of the health perceived. Each item is weighted to obtain a score between 0 (zero quality) and 100 (maximum quality) for each of the 9 dimensions. The first 4 dimensions can be summarized in a Physical Summary Score and the following 4 in a Psychic Summary Score (10). Excessive alcohol consumption is defined as 21 grams of alcohol per day (11);

- Hypertension (HTA) was defined as BP ≥ 140/90 mmHg or the concept of antihypertensive therapy regardless of PA;

- Diabetes mellitus is defined as fasting blood glucose ≥ 126 mg/dl and dysglycemia or pre-diabetes (hyperglycemia or glycemic intolerance) with a blood glucose level of between 100 mg/dl and 125 mg/dl (11).

Statistical analyzes

The data collected was captured using Microsoft Excel 2013 Software and imported into the Social Science Statistical Package (SPSS) software version 21.0. Quantitative variables were presented as mean ± standard deviation and their extremes in the tables. The comparison of proportions was made using the Chi square test. The statistics the test results used were interpreted at the level of significance $p \leq 0.05$ for statistical decision making.

Ethical consideration

All workers had agreed to write for participation in the study according to the Helsinki Declarations. The information collected from the workers was kept confidential.

RESULTS

Socio-demographic characteristics workers are presented in Table 1. Of the 210 subjects in the study,

Table 1. *Socio-demographic and occupational characteristics of study subjects*

	n = 210	%
sex		
Male Female	119 91	56,7 43,3
Socio-professionnel level		
Commanders Collaboration frameworks Executing agents Age (X ± and, extremes) 18-39 years 40-59 years	89 71 50 45,1 ± 8,9 82 128	42,4 33,8 23,8 (27-59) 39 61
Level of study		
Superior Secondary Primary	173 18 19	82,4 8,6 9

there were 119 men (56.7%) and 91 women (43%), a sex ratio H/F of 1.3. The most represented age group was over 40 years of age (61.0%). The average age was 45 ± 8.9 years and the extremes at 27 and 59 years. Regarding the professional level, there were 89 (42.4%), 71 (33.8%) and 50 (23.8%) executives. 173 (82.4%) subjects studied had a higher level of education, 18 (8.6%) at the secondary level and 19 (9.0%) at the primary level.

The overall prevalence of overweight was 23.8 % and obesity was 48.1%. Overweight and obesity combined resulted in a prevalence of 71.9 %.

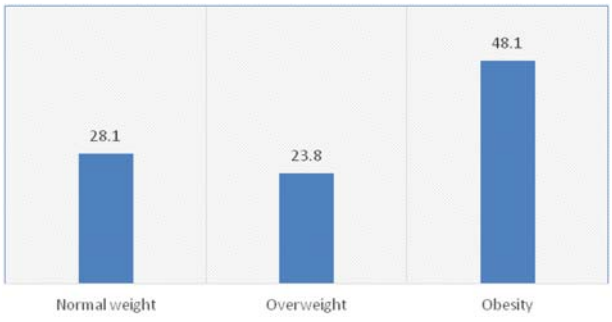

Figure 1. *Overall frequency of overweight and obesity*

According to sex, this prevalence is presented in Figure 2. When considering sex, Figure 2 shows that the specific prevalence is 80.2% for women and 65.5% for men. A statistically significant difference was found (P < 0.014). Compared to men, women have a high frequency of overweight and obesity (80.2% vs. 65.5%, (p < 0.014).

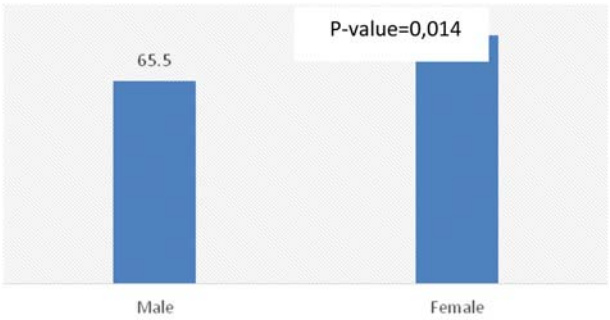

Figure 2. *Frequency of overweight and obesity by sex*

According to age, the frequency of overweight and obesity among the workers, Figure 3 shows us that workers aged 40 and over are most affected. The incidence of overweight and obesity increased significantly with age, so workers aged 40-59 were compared to those aged 18-39 (76.6%). vs 64.6%, p = 0.043).

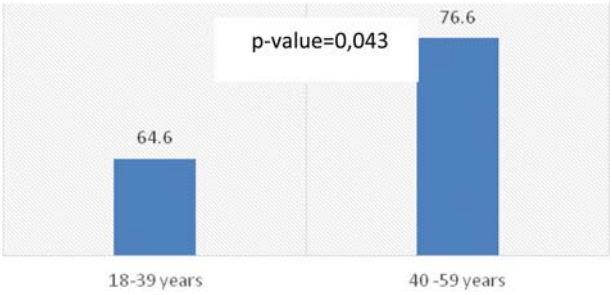

Figure 3. *Frequency of overweight and obesity by age*

Table 2 shows that the frequency of overweight and obesity increased significantly with high blood pressure (p = 0.0001) and the median daily energy expenditure was significantly higher among overweight workers than among workers obese 445 (111-1620) against 391 (118-1782).

Table 2. *Frequency, median and mean associated risk factors by nutritional status*

	BMI 18,5 à 24,9 Kg/m^2	BMI 25 à 29,9 Kg/m^2	BMI ≥ 30 Kg/m^2	p-value
Hypertension n (%)	7 (11,9)	23 (46,0)	58 (57,4)	0,0001
Diabetesmellitus n (%)	26 (44,1)	21 (42,0)	47 (46,5)	0,859
Physical inactivity	25 (50,0)	28 (47,5)	60 (59,4)	0,021
Energy expenditure (Kcal)	592 (132-1782)	445 (111-1620)	391 (118-1782)	0,007
Number of steps per day	5050 (234-12738)	4988 (254-12738)	4282 (100-11530)	0,003
Time spent sitting (min/day)	420 (60-780)	456 (60-900)	480 (60-840)	0,697

Table 3. *Determinants of overweight and obese in univaried and multivariate analysis*

Variables	analysis univaried			analysis multivariate		
	p-value	OR brut	IC 95%	p-value	OR aj	IC95%
Total sedentary time Physical inactivity	0,0001 0,000	8,928 5,31	1,865 10,087	0,001 0,000	8,422 7,33	1,852 1,972
Sex			1			
Male Female	0,008 0,000	0,998 4,756	0,996 2,029	0,011 0,003	0,697 4,334	0,994 0,451
Age			1			
18 to 39 years 40 years and over	0,000 0,000	6,521 4,926	2,724 3,987	0,881 0,004	1,093 3,599	0,341 0,395
Socioprofessional status			1			
Commanders Collaboration frameworks Executing agents	0,000 0,041 0,017	5,05 2,288 0,962	1,13 1,035 0,931	0,001 0,163 0,433	5,912 1,89 0,986	1,77 0,773 0,951
Quality of life			1			
Perception of physical health Perception of mental health	0,031 0,001	4,002 3,131	1,042 1,052	0,002 0,023	3,152 2,334	0,999 1,108

Table 3 identifies the determinants of overweight and obesity in univariate analyzes and multiple analyzes. In this regard, only the sedentary lifestyle expressed by the time spent sitting on the computer, physical inactivity, was the main determinant of overweight and obesity and increased the risk 8 times higher among sedentary employees.

DISCUSSION

This study aimed to determine the prevalence of overweight and obesity among workers in the city of Kinshasa. The prevalence of overweight and obesity among workers was 23.8% and 48.1%, respectively. Women and people aged 40 and over were the most affected with an associated risk, unlike men. This result corresponds to those observed by Gennus, Silander and combine in the world of work (11). According to the latest WHO global estimates, 38% of men and 40% of women over 18 are obese. In the workplace, obesity is very worrying, Koffi and alliers found a prevalence of 38.1% among port authority workers, both in Cameroon, Etoundi and ally found 37% in hotels and 57% observed by Fouda among shift workers working in the kitchen (12, 13, 14). The more you are in command, the more you become sedentary and change your eating behavior. This finding is consistent with those of Bergman, Burton and Barnett and colleagues who have found that high socio-occupational status is closely linked to physical inactivity, poor eating behavior and sedentary lifestyles (15, 16). However, Gardiner, Gao, Stamatakis and ally have shown that physical inactivity is related to an increase in nutritional status (17, 18, 19). This study can not allow us to generalize our results to all companies in Kinshasa and other national entities. Nevertheless, they show the extent of a public health problem hitherto poorly known in the professional world of Kinshasa. This is an interesting prospect for further studies that will allow employers to reduce costs related to staff health care and optimize business productivity.

CONCLUSION

Obesity is a common pathology in the workplace and hypertension is the main modifiable risk factor. Physical inactivity was the main determinants of overweight and obesity. Obesity is a public health problem in the workplace in the city of Kinshasa because of the command and collaboration frameworks are most affected. Awareness and behavior change education interventions to prevent these risks.

DECLARATION OF INTEREST

The authors declare that there are no conflicts of interest.

Sažetak

EPIDEMIOLOGIJA PREKOMERNE TEŽINE I GOJAZNOSTI ČLANOVA MENADŽMENTSKE SLUŽBE GRADSKE PROVINCIJE KINŠASA

Kusuayi Mabele Godefroid,[1] Nkiama Ekisawa Constant,[1] Bongo Nzeloka Jolie,[1] Christophe Delecluse,[2] Lepira Bompeka François[3]

[1] Kinesiology service, Physical Medicine and Rehabilitation, University of Kinshasa, Republic Democratic of Congo
[2] Faculty of movement and Rehabilitation sciences, Departement of movement science K.U. Leuven, Belgique
[3] Nephrology service, Internal Medicine, University of Kinshasa, Republic Democratic of Congo

Cilj: Utvrditi učestalost prekomerne težine i gojaznosti na radnom mestu. **Metode:** Sprovedena je unakrsna studija sa 210 nasumično odabranih radnika sa liste osoblja kompanije u gradu Kinshasa, u periodu od novembra 2013. do januara 2014. god., a koja je uključivala 119 muškaraca (56,7%) i 91 ženu (43,3%). Prekomerna težina je označena kod radnika sa BMI između 25 i 29.9 kg/m^2, a gojaznost kod onih kod kojih je BMI ≥ 30 kg/m^2. **Rezultati:** Rezultati studije pokazuju da je učestalost prekomerne težine kod radnika 23.8%, dok 48.1% radnika pati od gojaznosti, i to sa većom učestalošću kod žena (65.5% kod muškaraca naspram 80.2% kod žena, $p < 0.014$). Učestalost faktora rizika povezanih sa gojaznošću raste sa porastom težine i BMI ($p < 0.001$). **Zaključak:** Gojaznost je česta na radnim mestima, a hipertenzija je glavni modifikujući faktor rizika. Sedentarni način rada je glavni uzrok prekomerne težine i gojaznosti. Gojaznost je problem javnog zdravlja na radnim mestima u Kinšasi, a najviše su pogođene rukovodeće službe.

Ključne reči: prekomerna telesna težina, gojaznost, pridruženi faktori rizika, radno okruženje.

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Correspondence to/Autor za korespondenciju
KUSUAYI MABELE Godefroid
03 Thisuaka, Lemba Township, Kinshasa/RD, Congo
Kinesiology service, Department of Physical Medicine and Rehabilitation
Faculty of Medicine, University of Kinshasa, Democratic Republic of Congo
Email: kuswayi.mabele@unikin.ac.cd
phone number: +243 810387310