

Prevalence and distribution of risk factors for non-communicable chronic diseases among adults from Lages city, South of Brazil, 2007

Prevalência e distribuição dos fatores de risco para doenças crônicas não transmissíveis entre adultos da cidade de Lages (SC), sul do Brasil, 2007

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Abstract

Objective: To describe prevalence and the distribution of risk factors to non-communicable chronic diseases among adults from Lages, Santa Catarina, Brazil. **Methods:** Probabilistic sample of adult urban population, of both genders and aged from 20 to 59 years old was interviewed (n=2022). The sample process was made through conglomerates. It was applied a structured questionnaire with questions related to demographical, socio-economical, and behavior and self-referred diseases. In this study the following informations, related to the risk/protection factors for non-communicable chronic diseases, were used: gender, age, school background, body mass index, waist circumference, smoking, physical activity, pressure levels, self-referred mellitus diabetes and feeding characteristics. Prevalence for risk/protection factors for non-communicable chronic diseases, in the total population and according to gender and school background, was calculated. **Results:** The studied population is prone to non-communicable chronic diseases, presenting substantial proportions of hypertension (33.78%), overweight individuals (33.46%), obesity (23.46%) and abdominal obesity (43.81%). In relation to feeding characteristics, women presented higher prevalence of behaviors considered as protection factors, relative to men. It was found less than 30.0% of physically inactive individuals and 45.9% of smokers or ex-smokers. **Conclusion:** Descriptive studies such as this could be the basis for the development of public policies specific to the adult population of Lages, in order to guide the organization, planning and quality improvement of health assistance services, aiming the reduction in the occurrence and in the impact of non-communicable chronic diseases.

Keywords: Diabetes mellitus. Hypertension. Overweight. Obesity. Health surveys. Adult.

Resumo

Objetivo: Descrever as prevalências e distribuições dos fatores de risco para doenças crônicas não-transmissíveis (DCNT) entre adultos da cidade de Lages, Santa Catarina, Brasil. **Métodos:** Entrevistou-se amostra probabilística (n= 2022) da população adulta na faixa etária de 20 a 59 anos de idade, de ambos os sexos e residentes na zona urbana do município. O processo de amostragem foi por meio de conglomerados. O projeto aplicou questionário estruturado com questões relativas a variáveis demográficas, socioeconômicas, comportamentais e doenças autorreferidas. Para este estudo foram utilizadas as informações sobre os fatores de risco/proteção para DCNT: sexo, idade, escolaridade, índice de massa corporal, circunferência da cintura, tabagismo, atividade física, níveis pressóricos, diabetes mellitus autorreferida e características da alimentação. Foram calculadas as prevalências para os fatores de risco/proteção para DCNT na população total, de acordo com sexo e escolaridade. **Resultados:** A população estudada é uma população eminente para DCNT, apresentando proporções expressivas de hipertensos (33,78%) e indivíduos com excesso de peso (33,46%), obesidade (23,46%) e obesidade abdominal (43,81%). Com relação às características da alimentação, as mulheres apresentaram maiores prevalências de comportamentos considerados fatores de proteção, em relação aos homens. Foram encontrados menos de 30,0% de indivíduos fisicamente inativos e 45,9% de fumantes ou ex-fumantes. **Conclusões:** Estudos descritivos como o presente poderão servir de base para o desenvolvimento de políticas públicas específicas para a população adulta de Lages, de forma a orientar a organização, planejamento e melhoria da qualidade dos serviços de assistência à saúde, buscando a redução na incidência e no impacto das DCNT.

Palavras-chave: Diabetes mellitus. Hipertensão. Sobrepeso. Obesidade. Inquéritos epidemiológicos. Adulto.

Introduction

The nutritional transition verified in Brazil and in the world in the past decades has played a role in the overwhelming rise of the chronic non-communicable diseases (CNCDs) load in mortality and morbidity. World data point out that in 2001 the CNCDs and their risk factors were responsible for 47% of the deaths¹. There are studies pointing out unhealthy diets and sedentarism as main determinants in the expressive increase in the CNCDs prevalence. Among the passive modification factors, diet is the most important one to fight CNCDs, that is because data from the World Health Organization (WHO) indicate that about 80% of the coronary diseases, 90% of diabetes (type 2) and 30% of cancer could be avoided through healthy diet practices, greater physical activity and minor use of tobacco and its derivatives³. Recent studies have investigated the influence of social determinants about the diet practices and the food consumption. It is known that food consumption is influenced by the income and school background and that the dwelling place is one of the three first variables associated with consumption, under a cultural perspective.

Information about the Brazilian people food consumption from the 70s to 2003⁴ portrays the increase in the energetic percentage of total fats, saturated fats, cookies, soft drinks and free sugars, reduction in the intake of beans and continuity of the low intake of fruits and vegetables (less than the five portions a day recommended). Regarding physical activities, data from the Pesquisa de Padrões de Vida – *Life Pattern Research* – (1997) state that most of the adult population in Brazil performs less than 30 minutes of leisure activities in a week⁵. A more recent study carried out in individuals aged between 15 to 69 years old in Brazilian capitals, pointed out an important percentage of insufficiently active individuals, ranging from 43% in Fortaleza to 31% in Porto Alegre, with more prevalent percentages of physical inactivity in women⁶.

From the convincing evidence stating

about the positive effect of healthy diet practices and physical activities about the CNCDS and their risk factors², the WHO launched an important document "Global strategy on diet, physical activity and health¹", which sets the world commitment to reducing CNCDS and their aggravations. The focus of this Global Strategy is on the modifiable risk factors change, aiming to promote a healthy diet besides stimulating the physical practice and eliminate smoking. Along with these guidelines, the WHO highlights the need for the countries' constant monitoring on the CNCDS risk factors. The monitoring of risk factors that most influence on morbidity and mortality by chronic diseases is indicated, able to be modified in the basic health care scope⁷. A first successful experience was conducted in Brazil through the Sistema de Vigilância de Fatores de Risco e Proteção para Doenças Crônicas Não-transmissíveis por Inquérito Telefônico (VIGITEL)⁸ – *Risk Factors Monitoring and Chronic Non-Communicable Diseases Protection through Telephone Inquiry System* – performed on the adult population living in domiciles connected to the home phone system in Brazilian capitals; and the Sistema de Monitoramento de Fatores de Risco para Doenças Crônicas Não-transmissíveis por meio de Entrevistas Telefônicas (SIMTEL) *Risk Factors Monitoring for Chronic Non-Communicable Diseases through Telephone Inquiry System* – performed in the cities of Botucatu and São Paulo^{9,10}. However, the prevalence and spread of risk factors for chronic diseases in the other Brazilian cities and towns remain unknown. This way, the construction of indicators by educational and research institutions geographically close to these areas and cities is necessary, committed to investigating and intervening in the regional reality scope in order to assist the monitoring of actions of reduction and control of chronic diseases risk factors. This information is important for the organization steering, planning and enhancement of the quality in the health assistance services. The objective of this project is to describe the prevalence and distribution of risk fac-

tors for CNCDS among adults from Lages, in the state of Santa Catarina, southern Brazil.

Methods

Design, study population and samples

A cross-sectional, population-based study was carried out in the city of Lages in the state of Santa Catarina, located in the sierra region of the state, 176.5 km far from the state capital Florianópolis. The city population in 2005 was 166,733 inhabitants, with 97.4% of these inhabitants dwelling in the urban zone¹¹. In the 1996-2000 period the estimated population growth rate in Lages was 1.4%. The city presents a dependency ratio of 53.8% and the municipal human development index (M-HDI) was 0.183 in 2000, placing the city in the 316th position among all Brazilian cities and towns and in the 73rd position in the state of Santa Catarina. In 2004, the infant mortality was 22.8 out of 1,000 born alive, life expectancy was 71.9 years, fertility rate was 2.5 children by woman, average of study years was 6.6 and the illiteracy rate was 8.4%. In 2000, the average *per capita* income was R\$ 335.4 and the poverty proportion was 22%¹². The study population was constituted by adults aged between 20-59 years old, from both genders and living in the urban zone of the city. This age range comprises approximately 52% of the population of the city, in a total of about 86,998 people¹⁰. To calculate the sample size, the number of individuals, the confidence level of 95%, the phenomenon expected prevalence was considered unknown (50%), the sample error of 3.5% and the design study effect (sample by conglomerate), estimated as 2, were all considered. The expected prevalence was estimated in 50% because the present study is part of a research theme project where other outcomes and associated factors were analyzed, many of them with unknown prevalence such as self-referred diseases, life and diet habits, physical activity, mouth health, school background, income, demographical factors, among others. 10% was added in order

to compensate refusals and losses and 20% considering the presence of confusion variables. The sample size calculus was performed through the Epi Info 6.04 software¹³.

The final sample was 2,051 adults and the sampling process was reformed by conglomerates¹⁴. First, the census sectors were drawn out, then a block was drawn out and in this block a corner was selected to initiate the study. 60 census sectors were drawn out of the 186 sectors existing in the city of Lages. To draw out the 60 census sectors, a simple casual sampling was adopted, with no reposition, using a table of random numbers¹⁵.

Losses were considered in houses visited at least four times, with at least one weekend visit and one night visit, with the inquirer being unable to find the person to be interviewed or with his/her refusal in participating. Pregnant women, maimed or bed-ridden individuals, individuals with casts, mentally disabled and those that for any reason did not present the conditions to remain in the required position for the anthropometric measurements were excluded.

Data collection and variables definition

The field team was formed by 10 interviewer pairs; students of the health area courses of the Universidade do Planalto Catarinense (UNIPLAC). The field supervisors were the Master's students of the Programa de Pós-graduação em Saúde Coletiva (Collective Health Post-graduation Program) and the sub-coordinators were the advisor professors, all advised by a research general coordinator. The team's training and calibration were performed, in different moments, by the Master's students and sub-coordinators of the study.

The theme project, from which the present study arose, used the application of a wide structured questionnaire containing questions regarding demographical, socio-economical, behavioral variables and self-referred diseases in the adults of Lages. For the present study, information about the risk/protection factors for CNCDs from the

structured questionnaire was used, with anthropometric and pressure data taken through direct measurements at the individual's residence.

In this article the following variables were studied: gender (male, female), age (years), school background (years of formal study), body mass index (kg/m²), waist circumference (in cm), smoking (non-smoker, ex-smoker, current smoker), physical activity (minutes/weeks of moderate and intense activity), pressure levels (mmHg), self-referred mellitus diabetes (yes/no) and diet characteristics (weekly intake of fruits, vegetables, raw salads, beans and soft drinks and the habit of consuming whole milk and eating meats without removing visible fats).

The theme study questionnaire standardization and pre test were performed on 30 adults from the same research age range in a Health Unit area of the city. The pilot study was performed in a census sector, obtained through drawing (sortition), and not included in the sample of the present study. The field work was carried out from May to September of 2007.

There was wide disclosure in the main means of communication in the region (the most popular radio station, regional TV channels and newspapers) in order to provide the research a bigger support. The data collection quality control was performed through the application of a questionnaire in 10% of the sample, by telephone inquiries carried out by one of the supervisors.

The body weight measurement was obtained with a portable anthropometric scale (Tanita brand) with capacity for 130 kilograms and sensitivity of 100 grams. The scale was placed in a flat area and the measure was taken with the individuals wearing light clothes, standing in an upright position, with their feet together and arms stretched alongside the body. The height was taken with a non-elastic tape measure of 150 cm long and sensitivity of 1 mm, pinned in a vertical surface with no baseboard and placed 100 cm off the floor.

During the measurement, the people were barefooted and in an orthostatic posi-

tion, with no adornments in the head, in the Frankfurt position, with shoulders, buttocks and heels touching the wall and feet together, according to the WHO orientation¹⁶. After the measurements taking, the body mass index (BMI) was calculated (weight in kilos divided by the squared height in meters). Individuals with BMI less than 25 were classified as eutrophic, those with BMI between 25 and 29.9 were categorized as overweight and those with BMI above 30 were classified as obese individuals. The waist circumference measure was taken with a non-elastic tape measure, 1.5 meter long and sensitivity of 1 mm. The measure was taken with the individual standing. The tape measure circled the natural line of smaller circumference in the waist and the reading was obtained during the expiration. Values were considered adequate (low risk for metabolic complications) smaller or equal to 102 cm for men and smaller or equal to 88 cm for women².

The blood pressure levels were measured before and after the questionnaire application, taking into account the second measurement¹⁸. The pressure taking was carried out with the individual sitting down, feet on the floor, left arm relaxed and rested on a table at heart level and palm of the hand facing up, as oriented by Chobanian and collaborators (2003)¹⁹. Electronic blood pressure devices were used, with digital reading, properly calibrated, of the Techline® brand (São Paulo, SP). The systolic and diastolic pressure levels were later classified as normal and high. The individuals with systolic pressure above 140mmHg (SBP > 140mmHg) and/or diastolic pressure above 90mmHg (DBP > 90mmHg) or individuals suddenly hypertensive that were in regular use of anti-hypertensive medication whose pressure levels were high or not during the interview were considered high-pressure individuals¹⁹.

Regarding smoking, the individuals were classified in three categories: non-smokers, ex-smokers and current smokers²⁰. To evaluate the level of physical activity the International Physical Activity Question-

naire (IPAQ)²¹ was used, in its short version. The physical activity performed in the week prior to the interview and the relative score were calculated as being the sum of moderate activity minutes (for instance, light bike riding, dancing or doing chores around the house, garden or yard) plus two times the minutes of intense activity (for example, jogging, aerobics or playing soccer). This variable was dichotomized in sedentary people (with a score below 150 minutes of weekly physical activity) and physically active people (score \geq 150 minutes per week), according to Pale and collaborators (1995)²².

The questions regarding diet were based on a structured and tested through telephone inquiries questionnaire, SIMTEL^{9,10}. Protection factors for chronic diseases and the intake of fruits, vegetables, raw salads and beans five or more times a week were considered. The intake of soft drinks over three times a week and the habit of consuming whole milk and visible meat fats were considered as risk factors.

Data analysis

The data were doubly typed into the Epi-Info version 6.04 software¹³ by previously trained typists. After the data consistency verification, the analysis in the static package STATA version 10.0²³ was carried out. The analysis was weighted by gender, with values determined by the ratio between the proportion of individuals in the census and in the sample. The proportions, prevalence ratios and their respective intervals were calculated with 95% of confidence for the protection and risk factors for chronic diseases in the general sample and according to gender and school background. For proportion comparison, the Chi-Square and linear trend test was used, adopting a 5% significance level.

Ethical aspects

The project was submitted to the UNIPLAC Ethics Committee and approved, under record number 001/07. The free

informed term of consent signing was requested to the participants of the research.

Results

The response rate was 98.6% which corresponds to 2,022 individuals investigated, 47.6% were men and 1.4% corresponds to refusals and losses. The average age in the study was 31.02 years (standard deviation = 11.62), observing a greater proportion in the 20-29-year-old age range. The school background average was 9.15 years (standard deviation = 4.2), where over half the study population (53.4%) had nine years of formal education or more (Table 1).

In tables 2 and 3 and in pictures 1 and 2, the data are presented with proportions according to gender.

Tables 2 and 3 present the prevalence estimates (and respective intervals with 95% of confidence) for the protection/risk factors for CNCs in the entire population according to gender, respectively. By analyzing the results from both tables altogether, it is observed that when it comes to diet characteristics, women present more prevalence of behavior considered factors of protection in comparison to men, except in relation to the intake of beans, where men outnumbered

women. It is important to note about diet behaviors with risk of CNCs, where men present more prevalence of soft drinks, whole milk and visible meat fats intake.

A low prevalence of physically inactive individuals was observed in the population (less than 30%), with no difference in gender prevalence. The studied population is a population of eminent risk of CNCs, where 45.9% of the individuals were ex-smokers or current smokers, presenting expressive proportion of hypertensive, overweight, obese individuals and individuals with abdominal obesity. Overweight and hypertension were more prevalent among men and general obesity and abdominal obesity were more prevalent among women. Self-referred diabetes was 6.9%, meaningfully more prevalent among women.

Figures 1 and 2 present the prevalence of risk factors for chronic non-communicable diseases for women and men, respectively, according to school background. Negative association with obesity is observed in women, with the categories of the other variables not following a linear trend, intake of fatty meat or chicken with skin, low consumption of fruits and vegetables and smoking are statistically associated with the school background. For men, the

Table 1. Prevalence description and 95% confidence interval (CI 95%) of the studied population characteristics. Lages, SC, 2007

Tabela 1. Descrição das prevalências e intervalos com 95% de confiança (IC 95%) das características da população de estudo. Lages, SC, 2007

Variable	N	Prevalence [IC95%]
Gender (N=2022)		
Female	1243	52.35 [50.35–54.35]
Male	779	47.65 [45.65–49.65]
Age (N=2018)		
20–29	623	30.87 [28.53–33.21]
30–39	444	22.00 [29.51–23.48]
40–49	528	26.16 [23.85–28.47]
50–59	423	20.97 [18.72–23.19]
School years (N=1995)		
12 and more	456	22.91 [18.28–27.53]
9–11	611	30.97 [27.96–33.96]
5–8	571	28.89 [25.66–32.12]
0–4	357	17.23 [13.95–20.51]

Table 2. Prevalence and respective confidence intervals (CI 95%) of the risk and protection factors for non-communicable chronic diseases in the population. Lages, SC, 2007

Tabela 2. Prevalências e respectivos intervalos com 95% de confiança (IC 95%) dos fatores de risco e proteção para doenças crônicas não transmissíveis na população. Lages, SC, 2007

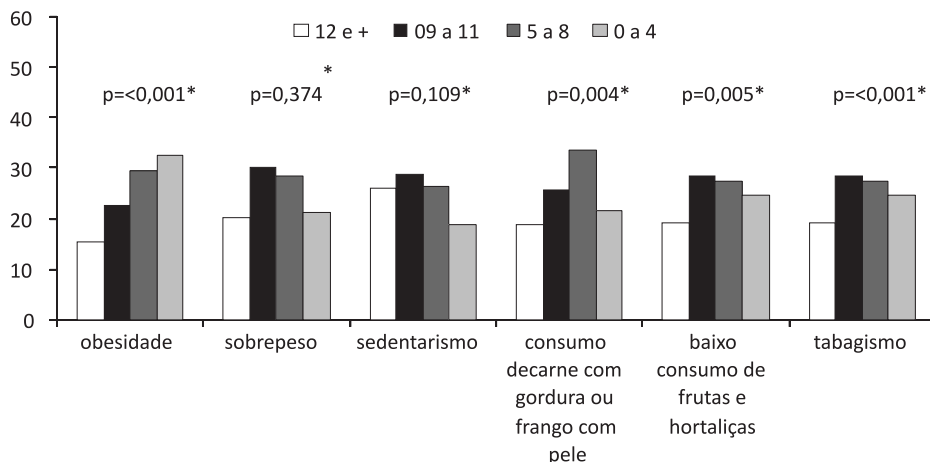
Risk/protection factors	N	prevalence [IC95%]
5 or more times a week consumption (N=2.021)		
Fruits	967	47.85 [45.15–50.54]
Raw salads	1151	56.95 [54.93–58.96]
Vegetables	573	28.35 [26.45–30.24]
Beans	1380	68.28 [65.68–70.88]
Soft drink intake 3 or more times a week habit (N=2.021)	487	23.90 [21.65–26.14]
Whole milk intake habit (N=1.367)	1367	81.37 [79.57–83.16]
Eating meats without removing visible fats habit (N=939)	939	47.66 [45.35–49.97]
Physically inactive individuals (N=1.952)	584	29.92 [27.81–32.02]
Smoking (N=2.016)		
Smoker	600	30.02 [27.91–32.13]
Ex-smoker	326	16.30 [14.76–17.84]
Overweight (BMI \geq 25 e $<$ 30 kg/m ²) (N=1969)	672	33.46 [31.2–35.70]
Obesity (BMI \geq 30 kg/m ²) (N=1969)	462	23.46 [21.74–25.18]
Waist circumference (N=870)	911	43.81 [41.35–58.64]
High pressure levels	683	33.78 [31.41–36.14]
Self-referred diabetes (N= 2012)	139	6.91 [5.74–8.07]

Table 3. Prevalence and respective confidence intervals (CI 95%) of the risk and protection factors for non-communicable chronic diseases in the population, according to gender. Lages, SC, 2007

Tabela 3. Prevalências e respectivos intervalos com 95% de confiança (IC 95%) dos fatores de risco e proteção para doenças crônicas não transmissíveis na população, segundo o sexo. Lages, SC, 2007

Risk/protection factors	Prevalence (IC95%)		p value
	Men	Women	
5 or more times a week consumption:			
Fruits	37.53 [34.05–41.01]	54.30 [51.28–57.32]	<0.001
Raw salads	48.97 [45.31–52.62]	61.94 [59.31–64.57]	<0.001
Vegetables	21.46 [18.43–24.49]	32.66 [30.04–35.27]	<0.001
Beans	73.39 [69.92–76.85]	65.08 [62.08–68.03]	<0.001
Soft drink intake 3 or more times a week habit	34.96 [31.15–38.77]	16.97 [14.55–19.39]	<0.001
Whole milk intake habit	83.66 [81.22–86.09]	79.90 [77.47–82.33]	0.05
Eating meats without removing visible fats habit	62.46 [59.90–65.03]	38.32 [35.09–41.55]	<0.001
Physically inactive individuals	31.27 [27.93–34.61]	29.05 [26.84–31.25]	0.295
Smoking			
Smoker	31.11 [28.29–33.99]	28.89 [26.22–31.56]	0.050*
Ex-smokers	18.27 [15.87–20.67]	14.85 [12.8–16.89]	
Overweight (BMI \geq 25 kg/m ²)	39.32 [35.53–43.10]	30.80 [27.85–33.75]	<0.001
Obesity (BMI \geq 30 kg/m ²)	19.27 [16.77–21.76]	26.14 [23.89–28.39]	<0.001
Waist circumference	19.53 [16.70–22.35]	59.11 [55.79–62.52]	<0.001
High pressure levels	38.12 [34.61–41.63]	31.05 [28.16–33.94]	<0.001
Self-referred diabetes	5.03 [4.24–5.82]	8.08 [6.37–9.74]	0.009

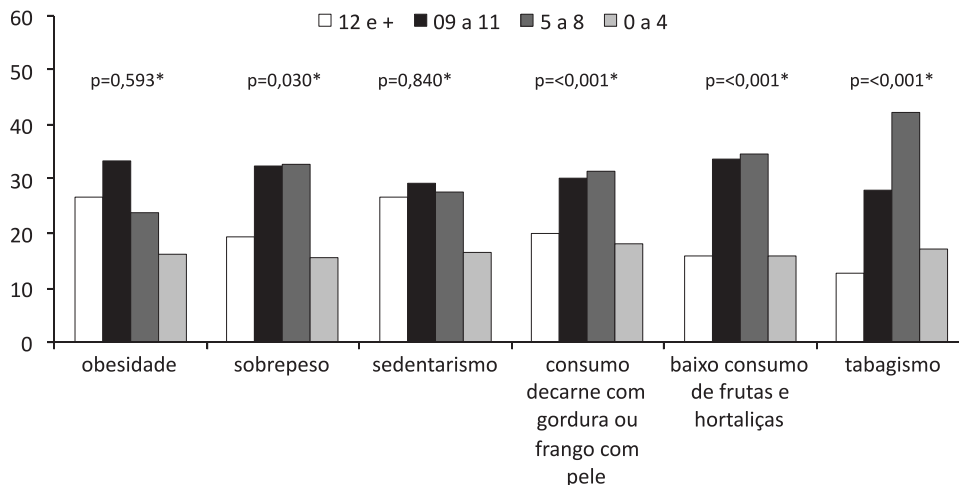
* p value for linear trend test / *p* de tendência linear.



* p de tendência linear. (p value for linear trend test)

Figure 1. Prevalence of risk factor for non-communicable chronic diseases among adult women, according to school background. Lages, SC, 2007

Figura 1. Prevalência de fatores de risco para doenças crônicas não transmissíveis entre as mulheres adultas, de acordo com a escolaridade. Município de Lages, SC, 2007



* p de tendência linear. (p value for linear trend test)

Figure 2. Prevalence of risk factor for non-communicable chronic diseases among adult men, according to school background. Lages, SC, 2007

Figura 2. Prevalência de fatores de risco para doenças crônicas não transmissíveis entre os homens adultos, de acordo com a escolaridade. Município de Lages, SC, 2007

overweight prevalence, intake of fatty meat or chicken with skin, low consumption of fruits and vegetables and smoking were statistically different.

Discussion

By considering the methodology used and the percentage of losses and refusals,

this study is representative of the adult population, aged between 20-59 years old, living in the urban zone in the city of Lages, which enabled the description of prevalence of protection/risk factors for the population. Based on the presented results, it is noted that this population suffers a considerable risk of developing other CNCDS, because they already present high prevalence of

hypertension (33.78%), overweight (33.46%) and obese (23.46%) individuals. Moreover, high prevalence of risk factors for the development of diseases like these was observed, such as smoking (45.9% of smokers or ex-smokers) and sedentarism (70.08%). Regarding protection, women present higher prevalence than men.

The intake of fruit, raw salads and cooked vegetables five or more times a week was statistically higher among women, as the results found in the cities of Botucatu and São Paulo^{9,10}. A study conducted in all Brazilian capitals and the Federal District²⁴ showed that the state capital of Santa Catarina presented bigger frequency of intake of fruits and vegetables five or more times a week, both in men and women (26.6% and 43.9%, respectively). Nonetheless, some smaller prevalences were found in the present study compared to the studies of São Paulo and Botucatu, comparing the consumption of these components separately. When singled out by school background, the low intake of fruits and vegetables was higher among the 9-11-year education range in women and in the 5-8-year education range in men. Differently from our study, Carvalhaes and Collaborators (2008)⁹ did not find differences according to school background for the low consumption of fruits and vegetables in both genders.

The habit prevalence of eating meats without removing visible fats was statistically higher for men than for women (62.46% and 38.32%, respectively), with the observation of a higher prevalence than the one found in Florianópolis (45% and 22.8%, respectively) and in Brazil (51.2% and 29%, respectively²⁴). Regarding the school background, the consumption prevalence of meats with visible fats was higher in the 5-8-year education range, for both genders. A high prevalence of whole milk intake was found in the population of Lages (81.37%), a higher proportion than the one found in Florianópolis, which was 51% for the population above 15 years old⁶.

A study with a population aged 15 years

old or more carried out in Brazilian capitals⁶ found a percentage of regular smokers of 19%. For the state capital of Santa Catarina, figures of 25% for men and 19% for women were found. These data agree with the data found in the present study, where the prevalence of regular smokers was higher in men than in women, however, the prevalence of smokers in both genders was higher. The study performed by Carvalhaes and collaborators (2008)⁹ found higher prevalence of smoking for individuals with school background smaller than 8 years, both for men and women. In the present study, higher prevalence of smoking was found in the 9-11-year education range for women and in the 5-8-year education range for men.

The same study applied in Brazilian capitals⁶ found prevalence of overweight (BMI ≥ 25) of 40% and 39% for Brazil and Florianópolis, respectively, higher numbers than the ones found in this study (34.14%). Regarding obesity (BMI ≥ 30), Carvalhaes and collaborators (2008)⁹ found a prevalence of 15.7% in the entire population, this proportion was smaller than the one found in this study (23.46% for the entire population). In the present study and in the aforementioned studies, the overweight prevalence was higher among men, regarding obesity though, the proportion was inverted, being higher in women. For the school background ranges an inverse trend was found among women, unlike for men where the prevalence figures were similar among the school background categories, which agrees with the prevalence found by Carvalhaes and collaborators (2008)⁹.

In the present study, a higher prevalence of hypertensive individuals was found in comparison with the ones found by Carvalhaes and collaborators (2008)⁹ in Botucatu (23.1%) and by Monteiro and collaborators (2005)¹⁰ in São Paulo (21.9%) and also higher than the one found in Florianópolis (26%)⁶. In these studies, higher prevalence of hypertension for women was found, unlike the prevalence found in Lages, where this number was higher in men. Regarding self-referred diabetes, the study in Lages

found prevalence of 6.91% in the population, whereas the prevalence found in Florianópolis was 5%⁶.

By comparing the prevalence results of risk factors for the adult population in the city of Lages with the ones found in other studies^{6,8,9,10,24}, it is noted that they were bigger for most of the studied variables, confirming the fact that this population

presents a considerable risk of developing CNCDS.

This way, studies such as this one may serve as a basis for the development of public policies specific for the adult population in Lages, in order to steer organization, planning and quality improvement of the health assistance services, aiming for the reduction in the incidence and impact of CNCDS.

References

1. Organização Pan-Americana da Saúde (OPAS). *Doenças crônico-degenerativas e obesidade: estratégia mundial sobre alimentação saudável, atividade física e saúde*. Brasília: Ministério da Saúde; 2003.
2. World Health Organization (WHO). *Diet, nutrition and the prevention of chronic diseases*. Geneva; 2003.
3. Comissão Nacional sobre Determinantes Sociais da Saúde – CNDSS. *As causas sociais das iniquidades em saúde no Brasil*. Relatório Final da Comissão Nacional sobre Determinantes Sociais da Saúde – CNDSS; 2008.
4. Instituto Brasileiro de Geografia e Estatística (IBGE). *Pesquisa de orçamentos familiares 2002-2003: análise da disponibilidade domiciliar de alimentos e do estado nutricional no Brasil*. Rio de Janeiro; 2004.
5. Monteiro CA, Conde WL, Matsudo SM, Matsudo VR, Benseñor IM, Lotufo PA. A descriptive epidemiology of leisure-time physical activity in Brazil (1996/97). *Rev Panam Salud Pública* 2003; 14(4): 246-54.
6. Ministério da Saúde e Instituto Nacional de Câncer. *Inquérito domiciliar sobre comportamentos de risco e morbidade referida de doenças e agravos não transmissíveis: Brasil, 15 capitais e Distrito Federal, 2002-2003*. Rio de Janeiro: INCA; 2004.
7. Organización Mundial de La Salud (OMS). *Vigilancia de los factores de riesgo relacionados con enfermedades no transmisibles: estado actual de la información em el mundo (Informe Surf 1)*. Genebra; 2003.
8. Ministério da Saúde. VIGITEL. Brasil 2006. *Vigilância de fatores de risco e proteção para doenças crônicas por inquérito telefônico: estimativas sobre frequência e distribuição sócio-demográfica de fatores de risco e proteção para doenças crônicas nas capitais dos 26 estados brasileiros e no Distrito Federal em 2006*. Brasília: Ministério da Saúde; 2007.
9. Carvalhaes MABL, Moura EC, Monteiro CA. Prevalência de fatores de risco para doenças crônicas: inquérito populacional mediante entrevistas telefônicas em Botucatu, São Paulo, 2004. *Rev Bras Epidemiol* 2008; 11(1): 14-23.
10. Monteiro CA, Moura EC, Jaime PC, Lucca A, Florindo AA, Figueiredo ICR, et al. Monitoramento de fatores de risco para doenças crônicas por entrevistas telefônicas. *Rev Saúde Pública* 2005; 39(1): 47-57.
11. Instituto Brasileiro de Geografia e Estatística – IBGE (on-line). 2007. Disponível em: <http://www.ibge.gov.br>. [Acessado em 18 de março de 2007].
12. Instituto Brasileiro de Geografia e Estatística (IBGE). *Contagem da população*. Rio de Janeiro; 2000.
13. Dean AG, Dean JA, Colombari D, Brendel KA, Smith DC, Burton AH, et al. *Epi Info, version 6: a word processing, database, and statistics program for epidemiology on microcomputers*. Atlanta, Georgia, USA: Centers for Disease Control and Prevention; 1994.
14. Bennett S, Woods T, Livanage WM, Smith DL. A simplified general method for cluster-sample surveys of health in developing countries. *World Health Stat Q* 1991; 44: 98-106.
15. Silva NN. *Amostragem probabilística. Um curso introdutório*. São Paulo: EDUSP; 1998.
16. World Health Organization (WHO). *Physical status: the use and interpretation of anthropometry*. Geneva; 1995.
17. World Health Organization (WHO). *Obesity: preventing and managing the global epidemic. Report of a WHO consultation on obesity*. Geneva; 1998.
18. Klein CH, Silva NAS, Nogueira AR, Block KV, Campos LHS. Hipertensão arterial na Ilha do Governador, Rio de Janeiro, Brasil. I. Metodologia. *Cad Saúde Pública* 1995; 11(2): 187-201.
19. Chobanian AV, Bakris GJ, Black HR, Cushman WC, Lee A, Green LA, et al. The seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure. *Hypertension* 2003; 42: 1206-52.
20. Menezes AMB, Victora CG, Padilla RP. The Platino project: methodology of a multicenter prevalence survey of chronic obstructive pulmonary disease in major latin american cities. *BMC Med Res Methodol* 2004; 4: 15.

21. Craig CL, Marshall AL, Sjostrom M, Bauman AE, Booth ML, Ainsworth BE, et al. International Physical Activity Questionnaire: 12-country reliability and validity. *Med Sci Sports Exerc* 2003; 35(8): 1381-95.
22. Pate RR, Pratt M, Blair SN, Haskell WL, Macera CA, Bouchard C, et al. Physical activity and public health. A recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *JAMA* 1995; 273(5): 402-7.
23. STATA Corp. Stata Estatical Software Release 9.0. College Station, Px: STATA Corporation, 2001.
24. Moura EC, Morais Neto OL, Malta DC, Moura L, Silva NN, Bernal R, et al. Vigilância de fatores de risco para doenças crônicas por inquérito telefônico nas capitais dos 26 estados brasileiros e no Distrito Federal (2006). *Rev Bras Epidemiol* 2008; 11(supl 1): 20-37.

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