

Smoking, consumption of alcohol and sedentary life style in population grouping and their relationships with lipemic disorders*

*Ignez Salas Martins, Leda Teixeira Coelho,
Monica Inés Casajus, Elisa Tieko Okani*

Department of Nutrition, School of Public Health, University of S. Paulo - Brazil

The study, part of the project "Atherosclerotic cardiovascular diseases, lipemic disorders, hypertension, obesity and diabetes mellitus in a population of the metropolitan area of the southeastern region of Brazil", had the following objectives: a) the characterization and distribution among typical human socio-economic groupings, of the prevalence of some particular habits which constitute aspects of life-style-the use of tobacco, the use of alcohol and sedentary activity; b) the establishment of the interrelation between the above-mentioned habits and some lipemic disorders. The prevalence of the habits cited behaved in the following manner: the use of tobacco predominated among men, distributed uniformly throughout the social strata; among the women the average percentage of smokers was 18,9%, a significant difference occurring among the highest socio-economic class, where the average was of 40.2%. The sedentary style of life presented high prevalence, among both men and women with exception of the women of the highest socio-economic level and of the skilled working class. The use of alcohol, as one would expect, is a habit basically practised by the men, without any statistically significant differences between classes. For the purpose of establishing associations between these risk factors and lipemic conditions four situations were chosen, of the following characteristics: 1- total cholesterol ≥ 220 mg/dl and triglycerides ≥ 150 mg/dl; 2- HDL cholesterol < 35 mg/dl for men and < 45 mg/dl for women and triglycerides levels ≥ 150 mg/dl; 3- HDL cholesterol < 35 mg/dl for men and < 45 mg/dl for women and triglycerides levels < 150 mg/dl; 4- total cholesterol ≥ 220 mg/dl with triglycerides levels < 150 mg/dl. Six models of multiple (backward) regression were established, with seven independent variables- age, sex, use of tobacco, consumption of alcohol, light physical activity, hypertension and obesity. Significant associations ($P < 0,05$) were revealed with hypercholesterolemia, accompanied by triglyceride levels ≥ 150 mg/dl, and the following independent variables: age, use of tobacco and the interactions between obesity and smoking, age and sedentary life-style, sex and obesity ($R^2=22\%$); the standardized B coefficient showed that the variables with the greatest weight in the forecasting of the variation in the levels of cholesterol were smoking and the interaction between obesity and smoking. The hypercholesterolemia accompanied by triglycerides levels < 150 mg/dl showed a positive association between total cholesterol and sex and the interactions obesity/smoking and sex/obesity. As regards HDL cholesterol accompanied by triglyceride/ levels ≥ 150 mg/dl was inversely associated with obesity and the interaction smoking/age and directly with age ($R=31\%$). The standardized B coefficients, indicated that the variables obesity and the interactions smoking/age possessed a weight three times greater than age alone in accounting for the variation in the serum levels of HDL cholesterol. When accompanied by triglycerides < 150 mg/dl there was no association between and the independent variables and the set of them presented R equal to 22%. The sum of top, in the population studied in this project, the component habits of life-style (smoking, alcohol consumption and sedentary activity) which constitute risk factors which determine morbidity from atherosclerotic cardiovascular diseases are be found distributed through all the typical social groupings of this particular form of social organization. On the other hand, the seven independent variables used in the multiple regression models for the explanation of the lipemic conditions considered presented multiple determination coefficients which varied, approximately, between 20% and 30%. Thus it is important that in the genetic epidemiology the study of the morbidities in question be emphasized.

Smoking, epidemiology. Alcoholism, epidemiology. Life style. Hyperlipidemia, epidemiology.

* Supported by "Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP)" (Process n° 91/0820-7 and "Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq)" (Process n° 410427/89-6).

Reprints: Ignez Salas Martins - Av. Dr. Arnaldo, 715 - 01246-904 - S. Paulo, SP - Brazil

The publication of this article was supported by FAPESP. (Process 94/0500-0).

Submitted in 4.20.1994. Approved in 11.29.1994.

Introduction

Life styles imply certain habits of living and forms of physical wear and tear in biological terms at the individual level within the specific group of a particular social formation.

Thus, labouring activities, kinds of nutrition and other culturally legitimated habits create life styles related to the factors which constitute physical environment and act on the human organisms in their search for ways of adaptation and vital balance. However, homeostasis is not always compatible with the potential longevity of the species as there exist within the life-styles risk factors related to morbidities which may lead to premature death. This is the case with atherosclerotic cardiovascular diseases among the etiological causes of which are to be found factors such as lipemic disorders, hypertension and obesity.

In their turn lipemic disorders, hypertension and obesity are morbidities generally associated among themselves and among whose causes are factors of a genetic and social nature.

Among these smoking habits may be observed, as well as the consumption of alcohol, sedentary life^{11, 12, 14, 16, 24, 26, 31}.

Therefore the clarification of the link between habits and morbidities leads, in the first place, to the characterization of the distinctions between prevalencies of the same between typical human groupings; afterwards to establish associations among habits and morbidities.

In accordance with this reasoning the present study project seeks: a) to characterize the differentials regarding the prevalence of smoking, consumption of alcohol, sedentary life style in human groupings, and b) to analyse some of the inter-relationships among smoking, alcohol consumption, sedentary life style and particular lipemic states - that is to say, how the habits are associated with particular lipemic situations as predictive variables.

Material and Method

The present study is part of the project "Atherosclerotic cardiovascular disease, lipemic disorders, hypertension, obesity and diabetes mellitus in a population of the Metropolitan Area of S. Paulo, SP, Brazil", carried out in Cotia county, located in the outskirts of

S. Paulo city. The methodology adopted in the research is described in earlier study¹⁸. The sample was taken from 1990-1991.

An approach was adopted with a view to delimiting typical social groupings, i.e., social classes, which should correspond to typical models of living and insertion into urban life and historically determined⁷. The actual basis for the definition of the social groupings were socio-economic and geographical criteria, on the basis of which certain "study areas" were delimited at various geographical points within the city - both centrally placed and on the outskirts- each of which corresponded to different living conditions, in accordance with a gradient of socio-economic levels.

The operationalization of the concept of social class was based on Singer²⁴ and Lombardi¹⁷. Four social classes were defined on the basis of information gathered through interviews, of socio-economic nature, such as occupation, position within occupation, ownership of property and its size, number of employees if any, schooling and income, both with regard to the person interviewed and the head of the family. The four classes may be characterized as follows:

- I- employer/owners with more than five employees or professionals of university level;
- II- small owners with fewer than five employees, primary or intermediate level of schooling and earning monthly more than five legal minimum salaries (approximately 350 dollars);
- III- salaried employees with working skills and primary or intermediate level of schooling;
- IV- under-employed or small property owners, generally with no permanent employment, with no working skills and with a monthly income of less than five legal minimum salaries.

Further, data were collected, by means of interviews, as to life style with regard to smoking consumption of alcohol and sedentary habits, defined as follows:

- smoker, a person who said that he smoked 10 or more cigarettes per day;
- a drinker, a person who replied affirmatively to the relevant questions of the CAGE questionnaire¹⁹;
- a sedentary person, one of light daily physical activity. Physical activity was defined according to the three categories: light, moderate and intense, in accordance with the profile of daily energy expenditure of the individual

expressed as multiples of the Basic Metabolic Rate (BMR), i. e., light activity <1.64 BMR; moderate activity 1.64-1.82 BMR and intense activity >1.82 BMR²⁵.

Obesity was defined as the relationship weight/height² for values $\geq 30 \text{ kg/m}^2$ ($\geq 6.25 \text{ lbs/ft}^2$)⁴.

Hypertension was defined by the values $\geq 160 \text{ mmHg}$ for systolic and $\geq 95 \text{ mmHg}$ for diastolic pressure¹³.

Hypercholesterolemia was defined according to the values for total serum cholesterol, being considered borderline-high for the values $\geq 200 \text{ mg/dl}$ and high for those $\geq 240 \text{ mg/dl}$; normal levels for the HDL -cholesterol was defined thus: 35 mg/dl for men and $\geq 45 \text{ mg/dl}$ for women²².

The simple population was composed of 1,049 people, 8 cases was lost due uncompleted information. The pilot project carried out in "study area 1" was excluded as the data gathered there on socio-economic conditions were of doubtful value.

Statistics Employed

The arithmetical averages of the percentages of smokers, drinkers and people of sedentary life style were calculated for each social class stratified by sex and age. The social classes were standardized in accordance with age by the direct method²⁷ to make possible to draw up a comparison of the differentials between them, then tested by the Khi-squared method. Six models of multiple regression were constructed for each of four lipemic situations in which the lipid levels appear as dependent variables:

Lipemic disorders characterized by a total cholesterol level above 220 mg/dl and triglyceride above 150 mg/dl :

First equation - total cholesterol as the dependent variable with the following independent variables: age, sex, smoking, alcohol consumption, sedentary life style, hypertension and obesity.

Second equation - In triglycerides as the dependent variables with the following independent variables: age, sex, smoking, alcohol consumption, sedentary life style, hypertension and obesity.

Lipemic disorders characterized by HDL-cholesterol levels equal to or bellow 45 mg/dl

for women and equal to or bellow 35 mg/dl for men, with that for triglyceride greater than or equal to 150 mg/dl .

Third equation - In triglycerides as the dependent variable with the following independent variables: age, sex, smoking, alcohol consumption, sedentary life style, obesity, hypertension.

Four equation - HDL-cholesterol as the dependent variable with the following independent variables: age, sex, smoking, alcohol consumption, sedentary life style, hypertension and obesity.

Lipemic disorders characterized by serum levels HDL -cholesterol equal to or bellow 45 mg/dl for women and equal to or bellow 35 mg/dl for men with triglycerides bellow 150 mg/dl .

Fifth equation - HDL-cholesterol as dependent variable with the following independent variables: age, sex, smoking, alcohol consumption, sedentary life style, hypertension and obesity.

Lipemic disorders characterized by total cholesterol serum levels equal to or above 220 mg/dl with triglycerides bellow 150 mg/dl .

Sixth equation- total cholesterol as the dependent variable with the following independent variables: age,sex, smoking, alcohol consumption, sedentary life style, hypertension and obesity.

The data were codified in the following way:
sex, -1= female and 1=male;
smoking, -1=no and 1=yes;
drinking, -1=no and 1=yes;
physical activity, -1=sedentary and 1=moderate or intense;

obesity, -1=no and 1=yes;
hypertension, -1=no and 1=yes.

Cholesterol total, HDL-cholesterol and triglycerides are taken as continuous variables.

Results

The distribution of habits of living expressed by smoking, drinking and sedentary life style between men and women, by social class, standardized by age, is to be found in Table 1.

As regard smoking, it is to be noted that the habit is more prevalent among men and uniformly distributed among the social classes, without there being any statistically significant

Table 1. Smoking, drinking and sedentary life style by social class, age standardized*. Cotia county, 1990-91.

Social Class	Men							Women						
	Smoking			Drinking		Sedentary life		Smoking**			Drinking		Sedentary life***	
	n	c	%	c	%	c	%	c	n	%	c	%	c	%
I	35	17	45.3	6	9.9	17	47.2	43	17	40.7	0	0.0	8	18.9
II	90	34	38.5	16	11.9	35	40.1	96	18	18.4	0	0.0	35	40.9
III	219	86	42.5	29	12.2	81	36.3	336	86	26.4	3	0.9	122	30.9
IV	84	36	43.4	14	18.2	35	40.0	138	26	13.6	1	0.7	55	42.4
Total	428	173	40.4	63	14.7	168	39.2	613	147	23.9	4	0.7	220	35.9

* Standardized by direct method

** 1-2 p<0.2 1-4 p<0.02

*** 1-2-3-4 p<0.02 1-2 p<0.05 1-3 p<0.02 1-4 p < 0.02 3-4 p < 0.02

differences among them. Among women the prevalence is considerable in the class of highest socio-economic level. Drinking is a habit basically to be found among men, with lesser prevalence, though of no statistical significance, in the class of highest socio-economic level. With regard to physical activity it is seen that more than 40% of the population under study is sedentary, with exception of women of the highest socio-economic level and men and women of the skilled working class.

On the other hand the attempt has also been made to detect the proportion in which the above-mentioned habits may be predictive of lipemic disorders. Individuals were grouped them, for this purpose, according to lipemic disorders, not necessarily in obedience to

Fredrickson's classification. In view of the characteristics of the population - predominantly young - it was decided to work with moderate hypercholesterolemia (serum levels of total cholesterol ≥ 220 mg/dl) so as not to run the risk of obtaining a group restricted to elderly people and thus lose the effect of the variable age. The same reasoning guided the choice of the thresholds for the concentration of triglyceride (≥ 150 mg/dl).

The Table 2 presents the mentioned models of multiple regressions with their respective Coefficients of Multiple Determination (R^2) which give the proportion in which the dependent variable is explained by the independents variables - age, sex, smoking, drinking, (sedentary) activity, obesity and hypertension.

Table 2. Multiple regressions among indicators of lipemic disorders (dependent variables) and age (A), sex (S), use of tobacco (T), physical activity (Ph), alcohol consumption (Al) obesity (O) and hypertension (H) (independent variables).

Lipemic Levels	Dependent Variable	Equation	R2
Total cholesterol ≥ 220 mg/dl Triglycerides ≥ 150 mg/dl	Total cholesterol (C)	$C = 177.3 + 0.27 A + 14.4 T + 13.0 Al + 21.8 OT + 0.34 PhA + 12.3 Al T + 18.0 SO$ (I)	0.22
	ln Triglycerides (TG)	(II)	0.19
Triglycerides ≥ 150 mg/dl HDL cholesterol ≤ 45 mg/dl (women) and ≤ 35 mg/dl (men)	ln Triglycerides (TG)	$TG = 3.79 - 1.72 Ph$ (III)	0.22
	HDL-cholesterol (HDL)	$HDL = 11.2 + 0.43 A - 20.6 O - 0.52 TA$ (IV)	0.31
HDL cholesterol ≤ 45 mg/dl (women), ≤ 35 mg/dl (men), Triglycerides < 150 mg/dl	HDL-cholesterol (HDL)	(V)	0.22
Total cholesterol ≥ 220 mg/dl Triglycerides < 150 mg/dl	Total cholesterol (C)	$C = 195.7 + 32.5 S + 47.2 OT + 30.0 SO$ (VI)	0.20

For the lipemic state characterized by the concentration of total cholesterol ≥ 220 mg/dl and of triglycerides ≥ 150 mg/dl two multiple regression equations were constructed in the first of which total cholesterol was the dependent variable and in the second of which the natural logarithm of the concentration of triglyceride was. It is to be seen that the levels of total cholesterol (first equation) are significantly associated ($p < 0.05$) with the variables age, smoking, drinking and with the interactions sedentary physical activity /age and drinking/smoking giving R^2 equal to 22%. In the second equation the natural logarithm of the triglycerides is the dependent variable (thus obtaining normal distribution) and showed no significant association with any of the independent variables, though altogether they account (R^2) for 19% of the variations in the triglycerides levels when expressed in this way.

In the lipemic condition in which the levels of HDL-cholesterol were < 45 mg/dl for women and < 35 mg/dl for men, accompanied by triglycerides levels ≥ 150 mg/dl (third equation) the HDL-cholesterol showed direct association with age and an inverse association with obesity and the interaction smoking/age

(possibly expressing the duration the habit), with R^2 equal to 31%. In this turn, the natural logarithm of the triglycerides concentration (fourth equation) is inversely associated with light physical activity, with R^2 equal to 22%.

Table 3 gives the weight of each independent variable, linked to the regression models already presented, by means of the B standardized coefficient and respective descriptive levels: in the first equation, for example, the interaction of the variables smoking/obesity represents twice that of drinking and 40% more than smoking alone in the prediction of the levels of total cholesterol in the moderate hypercholesterolemia accompanied by triglycerides levels above 150mg/dl.

In the fourth equation, for each increase of one year there is corresponding diminution of 2.94mg of HDL-cholesterol in the obese when below normal levels of this constituent are accompanied by triglycerides levels above 150mg/dl. On the other hand, in the fifth equation it is found that there is an increase in the risk of hypercholesterolemia for the male sex, and a greater effect is registered in the interaction of the variables sex/obesity.

Table 3. Relative weight (standardized B coefficient)² of variables age (A), sex (S), use of tobacco (T), alcohol consumption (Al), physical activity (Ph), obesity (O) in the prediction of lipemic state in multiple regressions.

Lipemic States	Dependent Variable	Independent Variable	Standardized B	Descriptive Level
Total cholesterol (C) ≥ 220 mg/dl Triglycerides (TG) ≥ 150 mg/dl	Total cholesterol (C)	age (A)	0,1638	0,069
		sex (S)		
		tobacco (T)	0,6988	0,016
		alcohol (Al)	0,4382	0,019
		OT	0,9210	0,003
Cholesterol total (C) ≥ 220 mg/dl Triglycerides > 150 mg/dl	Cholesterol total (C)	PhI	0,5296	0,018
		AIT	0,5486	0,016
		SO	0,4148	0,048
		sex (S)	3,836	0,067
Triglycerides (TG) ≥ 150 mg/dl HDL cholesterol (HDL) ≤ 45 mg/dl -women ≤ 35 mg/dl -men	Triglycerides (TG) HDL cholesterol (HDL)	OT	4,390	0,030
		SO	5,024	0,018
		Physical activity	-3,828	0,019
		age (A)	1,102	0,019
		obesity (O)	-2,948	0,026
		TA	-3,356	0,021

2 Beta $k = B_k (S_k/S_y)$ where B_k and S_y are, respectively the B coefficient and the standard deviation of the k-th independent variable and S_y the standard deviation of the dependent variable.

Comentary

The distribution of the components of the life style represented by drinking, smoking, and sedentary activity among the classes express cultural habits in relation to which these grouping have established strategies of survival, including leisure and others aspects of the social life. Table 1 shows that these habits are to be found more or less uniformly throughout social groups, with no significant differences. For example, the proportion of sedentary individuals varied between 40 and 59%, approximately, with the exception of the women belonging to class of highest socio-economical level (27.3%). Probably self-care are to be found among women of this class who have time available for physical exercise, instead of the domestic work in large houses, account for his result. A different situation is found in the others classes of lower acquisitive power in which is common for women to live inactive in small rooms bare of furniture or other comforts. The men belonging to the class of higher socio-economic level are sedentary in the measure in which the great majority of them dedicate their time to working activities in offices or to intellectual work, and also relegate self-care to second place, a fact brought to light by this study project. On the other hand, salaried workers, as a result of the type of local industry dedicate their time to light activities and under employed, unskilled, are mainly watchmen or odd-jobs men: and these latter, though they engage in activities which demand physical effort, spend job-less periods because of the lack of demand for labor.

Smoking is of more or less uniform prevalence of between 40 and 50%, approximately, involving the men of all the classes and the women of higher socio-economic level, who stand out from the others by virtue of their economic independence.

Alcohol consumption is seen to be a habit of greater prevalence in the classes of lower socio-economic level. Among the small shopkeepers for example, there are many owners of bars frequented by laborers for whom it is the only leisure option on the out-skirts of the city, thus possibly leading part of this population into this habit.

As regards the lipemic conditions dealt with in the regression equations, the choice of

them was made by virtue of questions raised as to role of the triglycerides and of HDL-cholesterol as a risk factor in atherosclerotic cardiovascular disease^{1,2,3,5,8,9,21,30}. In some studies triglycerides have been indicated as an independent risk factor and in others when confusing variables such as arterial pressure, smoking, physical activity and glucose metabolism indicators are controlled the effect of this constituent, in the associations established, diminishes considerably²⁵. On the other hand, it has been demonstrated that HDL-cholesterol by itself, whether or not in the presence of hypercholesterolemia has a negative association with mortality by atherosclerotic cardiovascular disease, when accompanied by high triglycerides levels, they increase the risk of these diseases^{6,10,15,20,21,24}. It has been demonstrated that these lipemic states are related to hyperinsulinemia, centralized obesity, resistance to insulin and hypertension, among others, in such a way that they leave the way open for further research into the inter-relationships between triglycerides and the control of the metabolism of HDL-cholesterol.

In this study it is seen in all the equations that the seven independent variables account for the variations in the lipemic levels in proportions that vary between 20 and 30%, approximately. Other factors of a genetic nature or eating habits probably act with greater intensity in the determination of lipemic conditions and, thus, for a fuller explanation of non-transmissible diseases a Genetic Epidemiology has proposed, on the basis of a series of theories, which seek an etiology for these morbidities based on genetic and environmental factors²⁹.

It should also be emphasized that in the presence of low triglycerides levels (of less than 150 mg/dl) hypercholesterolemia is associated with the variables sex and the interactions obesity/smoking and sex/smoking, while in the presence of levels above 150mg/dl significant associations were found with a greater number of variables (age, smoking, alcohol consumption and the interactions with the variables obesity/smoking, physical activity/age and alcohol consumption/smoking, maintaining, even so, values close to those for Coefficients of Multiple Determination (R^2)).

As regards HDL-cholesterol, the inverse association between this constituent and obesity and smoking, already described in the literature, was only discovered in the presence of

triglycerides levels higher than 150mg/dl, under these conditions, the Coefficient of Multiple Determination (R^2) was the highest registered for any of the regression models proposed, attaining a value of 31% (fourth equation, Table 2). It also appears that, in this lipemic condition, sedentary life style acts on HDL-cholesterol by means of the effect it exercises on the triglycerides (third equation, Table 2); as for this aspect, similar results were found by Patsch et al²³.

In their turn, the standardized B coefficients (Table 3) demonstrate that smoking and the interaction obesity/smoking exercise greater explanatory effect with regard to the serum levels of total cholesterol, in the first equation, when the serum cholesterol levels were associated with triglyceride concentrations higher than 150mg/dl. On the other hand, in the lipemic state characterized by low levels of HDL-cholesterol and triglycerides levels greater than 150mg/dl, the interaction smoking/age possessed greater weight than obesity.

Thus it is to be seen in this study that constituent elements of life style represented by smoking, alcohol consumption and sedentary activity are to be found in all the social classes. They are also demonstrably explanatory factors of the lipemic conditions which determine the morbidities which are a part of the etiology of the atherosclerotic cardiovascular diseases.

References

- ABBOTT, R. D. et al. High density lipoprotein cholesterol, total cholesterol screening, and myocardial infarction. *Arteriosclerosis*, 8:207-11, 1989.
- ARNTZENIUS, A. C. Regression of atherosclerosis: benefit can be expected from low LDL cholesterol and high HDL cholesterol levels. *Acta Cardiol.*, 46: 431-8, 1991.
- BETTERIDGE, J. High density lipoprotein and coronary heart disease: how it protects is still a mystery. *BMJ* 298: 974-5, 1989.
- BRAY, G. A. Obesity definition, diagnosis, and disadvantages. *Med. J. Australia*, 142:52-8, 1985.
- CASTELLI, W. P. et al. Incidence of coronary heart disease and lipoprotein cholesterol levels: The Framingham study. *JAMA*, 256: 2835-8, 1986.
- CASTELLI, W. P. Triglycerides and serum cholesterol (letter). *Postgrad Med.* 90: 47-53, 1991.
- CASTELLS, M. ¿Que és sociológica urbana? In: Castells, M. *Problemas de investigación en sociología*, urbana. Madrid, Siglo Vienteuno de España Ed., 1971, p.15-45.
- GARBER, M. A. et al. Screening asymptomatic adults for cardiac risk factors: the serum cholesterol level. *Ann. of Intern. Med.*, 110: 622-39, 1989.
- GARRISON, R. J. et al. Cigarette smoking and HDL cholesterol: the Framingham study. *Atherosclerosis*, 30:17-35, 1978.
- GOLDBOUR, V. & MEDALIE, J. H. High density lipoprotein cholesterol and incidence of coronary heart disease-The Israeli Ischaemic Heart Study. *Am.J. Epidemiol.*, 109:296-308, 1979.
- GRUNDY, M. S. et al. The place of HDL cholesterol management: a perspective from the National Cholesterol Education Program. *Arch. Intern. Med.*, 149:505-10, 1989.
- HEYDEN, S. et al. The combined effect of smoking and coffee drinking on LDL and HDL cholesterol. *Circulation*, 60: 22- 5, 1979.
- JOINT. The 1988 Report. National Committee on Detection, Evaluation, and Treatment of High Blood Pressure, *Arch. Intern. Med.*, 148:1023-38, 1988.
- KEIL, U. Alcohol and blood pressure and its interaction with smoking and other behavioural variables results from MONICA Augsburg Study 1984-1985. *J. Hypertension*, 9: 491-8, 1991.
- LAWS, A. et al. Relation of fasting plasma insulin concentration to high density lipoprotein cholesterol and triglyceride concentration in men. *Arteriosclerosis thrombosis*, 6:1636-42, 1991.
- LINN, S. et al. Serum total cholesterol: HDL cholesterol ratios in US white and black adults by selected demographic and socio-economic variables (HANES II). *Am J. Public Health*, 81:1038-43, 1991.
- LOMBARDI, C. et al. Operacionalização do conceito de classes sociais em estudos epidemiológicos. *Rev. Saúde Pública*, 22: 253-65, 1988.
- MARTINS, I. S. et al. Doenças cardiovasculares ateroscleróticas, dislipidemias, hipertensão, obesidade e diabetes melito em população da área metropolitana da região Sudeste do Brasil. I-Metodologia da pesquisa. *Rev. Saúde Pública*, 27: 250-61, 1993.
- MASUR, J. et al. Detecção precoce do alcoolismo em clínica através do questionário CAGE. *J. Bras. Psiqu.*, 34:31-4, 1985.
- MILLER, G. J. & MILLER, N. E. Plasma high density lipoprotein concentration and development of ischemic heart disease. *Lancet*, 1:16-9, 1975.
- NHI CONSENSUS CONFERENCE. Triglyceride, high density lipoprotein, and coronary heart disease. *JAMA*, 269:505-10, 1993.
- NATIONAL CHOLESTEROL EDUCATION PROGRAM: report of the Expert Panel on Detection, Evaluation and Treatment of Cholesterol in Adults; United States US Department of Health and Human Services, 1989. (NHI publication No 89-2925).
- OHARA, K. et al. Factors associated with high density lipoprotein cholesterol in Japanese and American telephone executives. *Am. J. L. Epidemiol.*, 134:137-48, 1991.
- PATSCH, W. et al. Relation of high density lipoprotein cholesterol and its subfractions to Apolipoprotein Cholesterol and apolipoprotein A-I and fasting triglycerides: the role of environmental factors. *Am J. Epidemiol.*, 136:546-57, 1992.
- REUNION CONSULTIVA CONJUNTA FAO/OMS/UNU DE EXPERTOS, Roma, 1981. *Necessidades de energia y de proteína informe*. Ginebra, Organización Mundial de la Salud, 1985. (OMS- Serie de Informes Técnicos, 724).
- ROSEMBERG, J. *Tabagismo: sério problema de Saúde Pública no Brasil*. São Paulo, Almed-Edusp, 1991, p. 137-65.
- SANTOS, J. L. Principais técnicas de análise e projeção. In: Santos, J. L. org et al. *Dinâmica de população: teoria métodos e técnicas*. São Paulo, T.A. Queiróz, 1980, p.103-55.
- SINGER, P. I. *Dominação e desigualdade*. Rio de Janeiro, Paz e Terra, 1981.

29. SORENSEN, T. I. A. Genetic epidemiology utilizing the adoption method: studies of obesity and of premature death in adults. *Scand. J. Soc. Med.*, 19:14-19, 1991.
30. SPAGNOLO, A. et al. High density lipoprotein cholesterol distribution and predictive power in some Italian populations studies. *Eur. J. Epidemiol.*, 5:328-35, 1989.
31. WOLF, R.N. & GRUNDY, S.M. Influence of weight reduction on plasma lipoprotein in obese patients. *Arteriosclerosis*, 3:160-9, 1983.

Resumo

O estudo, parte do projeto "Doenças cardiovasculares ateroscleróticas, dislipidemias, hipertensão, obesidade e diabetes melito em população da área metropolitana da região Sudeste do Brasil", teve os seguintes objetivos: a) caracterizar a distribuição da prevalência de tabagismo, etilismo e sedentarismo entre grupos humanos típicos, do ponto de vista socioeconômico; b) estabelecer associações entre os hábitos e morbidades citados e determinados estados lipêmicos. A prevalência dos hábitos em questão comportou-se da seguinte forma: tabagismo, predominou entre os homens, com prevalência média de 45%, uniformemente distribuída entre as classes; entre as mulheres o percentual médio foi de 22,5%, com diferença significativa para a classe de mais alto nível socioeconômico, com 46,3%. O sedentarismo apresentou alta prevalência, entre homens e mulheres, entre 40% e 50%, não havendo diferenças estatisticamente significantes entre os sexos e nem tampouco entre as classes. O etilismo foi um hábito fundamentalmente difundido entre os homens, sem diferenças de prevalência estatisticamente significantes entre as classes. Para o estabelecimento de associações entre hábitos e estados lipêmicos foram escolhidas quatro situações, com as seguintes características: 1 - Hipercolesterolemia moderada acompanhada de níveis séricos de triglicérides menores ou iguais e maiores de 150mg/dl; 2 - HDL colesterol sérico abaixo da normalidade acompanhado de níveis de triglicérides iguais ou maiores de 150mg/dl ou menores de 150mg/dl. Foram estabelecidos seis modelos de regressão múltipla, com sete variáveis independentes - idade, sexo, tabagismo, etilismo, sedentarismo, hipertensão e obesidade. Na primeira situação lipêmica houve associações significantes entre a hipercolesterolemia, acompanhada de níveis de triglicérides ≥ 150 mg/dl, com as seguintes variáveis independentes: idade, tabagismo e as interações entre obesidade/tabagismo, sedentarismo e sexo/obesidade, com R^2 igual 22%; as variáveis de maior peso na predição da variação dos níveis de colesterol total foram o tabagismo e a interação entre obesidade/tabagismo. A hipercolesterolemia acompanhada de níveis de triglicérides menores do que 150mg/dl associou-se às seguintes variáveis: sexo, interações obesidade/tabagismo e sexo/obesidade. Para a situação 2 - o HDL colesterol, acompanhado de níveis de triglicérides ≥ 150 mg/dl, associou-se inversamente às variáveis obesidade e a interação tabagismo/idade e diretamente à idade ($R^2=31\%$); as variáveis obesidade e a interação tabagismo/idade apresentaram peso três vezes maior do que a idade na explicação da variação dos níveis séricos do HDL colesterol. Na presença de níveis séricos de triglicérides menores do que 150mg/dl não houve qualquer associação com as variáveis aludidas e o conjunto apresentou R^2 igual a 22%. Fica evidente, que as associações inversas entre HDL-colesterol com o tabagismo e obesidade, já descritas na literatura, só ocorreram na presença de níveis de triglicérides ≥ 150 mg/dl. Constata-se que na presença de baixos níveis de triglicérides diminui o número de variáveis preditivas da hipercolesterolemia. Em síntese, na população abordada, os hábitos componentes do estilo de vida (tabagismo, etilismo e sedentarismo), que se constituem em fatores de risco de morbidades determinantes das doenças cardiovasculares ateroscleróticas, encontram-se distribuídos em todos os grupos sociais típicos nesta determinada forma de organização social. Por outro lado, as sete variáveis independentes utilizadas nos modelos de regressão múltipla apresentaram coeficientes de determinação múltipla, que variaram entre 20 e 30% aproximadamente. Ressalta-se, desta forma, a importância da epidemiologia genética no estudo das morbidades em questão.

Fumo, epidemiologia. Alcoolismo, epidemiologia. Estilo de vida.