Prevalence of Risk Factors and Global Cardiovascular Risk in the Population of Tres Lomas

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SUMMARY

Background
Cardiovascular diseases are the first cause of mortality in developing countries and deaths attributed to these conditions are increasing. In Argentina, cardiovascular diseases and cancer account for more than 50% of annual deaths. Unlike infectious diseases, these conditions are generically called non-communicable diseases, and it has been demonstrated that they can be prevented through an adequate control and management of cardiovascular risk factors. Thus, it is essential to report the prevalence of these risk factors and how they change over time in order to perform an epidemiological surveillance of the problem of cardiovascular diseases in the population and, in turn, propose preventive community actions.

Objectives
To obtain information on cardiovascular risk factors in the population of Tres Lomas (Buenos Aires), estimate the global cardiovascular risk (GCR) and compare these results with those described for the whole Argentina.

Material and Methods
Five hundred and twenty two adults from Tres Lomas were randomly surveyed. The PAHO questionnaire for epidemiological surveillance was used and anthropometric measurements were estimated. Lipid levels and glycemia were determined in 100 subjects in order to estimate GCR, defined as the probability to develop a new non-fatal event or coronary death over the next 10 years. Finally, these prevalence rates were compared to the national estimations.

Results
The prevalence of diabetes (7.7% versus 11.9%; $p<0.0001$), smoking habits (27.7% versus 33.4%; $p<0.0054$) and depression (14.4% versus 22.8%; $p<0.0001$), was lower than the country's average; however, the rate of overweight and obesity was greater (58.4% versus 49.1%; $p<0.0001$). Although blood pressure measurement was more frequent than the average (82.2% versus 68.4%; $p<0.0001$), determinations of glycemia and cholesterol levels were less frequent than expected (50.2% versus 69.3%; $p<0.0001$ and 60.3% versus 72.8%; $p < 0.0001$, respectively). Fruit and vegetable consumption was greater than in the whole country (82.6% versus 64.7%; $p<0.0001$). At least one fifth of the population presented a moderate [21% (13.1-28.9%)] to high [12% (5.4-18.6%)] GCR.

Conclusions
The prevalence of diabetes, smoking habits and depression was lower in Tres Lomas, although overweight and obesity were more frequent than the country's average. Blood pressure control was more frequent and determinations of glycemia and cholesterol levels were lower than expected. At least one fifth of the population presented a moderate to high GCR of developing a coronary event or death over the next 10 years.

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Key words > Risk factors - Cardiovascular - Epidemiological surveillance - Non-communicable diseases

Abbreviations >

CDC	Centers for Disease Control and Prevention	**INDEC**	National Statistics and Censuses Institute (*Instituto Nacional de Estadística y Censos*)
ECG	Electrocardiogram	**LDL**	Low-density lipoprotein
ENFR	*Encuesta Nacional de Factores de Riesgo* (National Survey of Risk Factors)	**PAHO**	Pan American Health Organization
HDL	High-density lipoprotein	**GCR**	Global cardiovascular risk
BMI	Body mass index	**TG**	Triglycerides

BACKGROUND

Cardiovascular diseases are the first cause of mortality in developing countries, and deaths attributed to these conditions are increasing. In Argentina, cardiovascular diseases and cancer account for more than 50% of annual deaths. Unlike infectious diseases, these conditions are generically called non-communicable diseases, and it has been demonstrated that they can be prevented through an adequate control and management of cardiovascular risk factors. Thus, it is essential to report the prevalence of these risk factors and how they change over time in order to perform an epidemiological surveillance of the problem of cardiovascular diseases in the population and, in turn, propose preventive community actions. In addition, there is currently clear evidence that population-based health promotion and primary prevention interventions directed at different social determinants and non-modifiable risk factors constitute the best cost-effectiveness strategy to treat large populations.

Data regarding the burden of risk factors for Argentine population (1) consists of general information nationwide or from few urban centers in particular. (2) Undoubtedly, the estimation of these factors among the different communities would be useful to become aware of the health status and the risk of the local population compared to the rest of the country, as well as to build local policies for health promotion and prevention. Based on this previous framework, the goal of this study was to develop an epidemiological registry of cardiovascular risk factors in an adult population from the county of Tres Lomas in the province of Buenos Aires. This idea is aligned with the recent developments of the impact of social determinants in the occurrence of in diseases. The study was proposed and organized by the authorities of the county of Tres Lomas with the cooperation of the Research Area of the Argentine Society of Cardiology in its design, implementation and data analysis.

The primary aim of this study was to obtain direct information from a survey and by different biochemical and anthropometric measurements of the distribution of the main cardiovascular risk factors in the general population of the county of Tres Lomas, in the province of Buenos Aires. The secondary aim was to relate those factors with the social and demographic characteristics of the population, estimate the global cardiovascular risk (GCR) according to a score, and finally, compare these local results with the burden of risk factors described in the 2005 National Survey of Risk Factors for the entire Argentine population.

MATERIAL AND METHODS

Between August 30 and September 1, 2007, we conducted a survey (designed as a cross-sectional study) in the county of Tres Lomas in the province of Buenos Aires, based on the recommendations suggested by the Pan American Health Organization (PAHO) for theme areas and priorities for promotion, prevention and control of cardiovascular diseases. (3)The target population of this study was constituted by people older than 18 years living in the urban environment of the county. After a random sampling of 2,452 housing units, 522 adults were surveyed; a second sampling selected 100 people from survey respondents in order to perform different direct anthropometric and biochemical measurements. Figure 1 summarizes the general information of the county of Tres Lomas.

Instrument Selection

The survey was based on the PAHO questionnaire for epidemiological surveillance for non-communicable diseases and on the Centers for Disease Control and Prevention (CDC) cardiovascular risk factors and non-communicable diseases surveillance (NCD Surveillance Toolkit: Risk Factors for Non-Communicable Diseases). (4) The indicators included in the questionnaires were validated by the Ministry of Health and are used in the Permanent Home Survey from the INDEC. (5) The questionnaire included the following thematic modules:

1. Personal data, housing, employment situation, education, and coverage and access to medical care.
2. Anthropometric data (weight, height, body mass index, waist circumference and hip circumference).
3. General health.
4. Nutrition and alcohol consumption.
5. History of cardiovascular disease.
6. Risk factors (tobacco use, hypertension, cholesterol and diabetes mellitus).
7. Physical activity.

Total population	7,439 people.
Population density	5.9 people per km .
< 15 years	24.9%.
>65 years	15.2%
Number of households	2,452
Percentage with UBN	7.6%
Running water network	76.3%
Illiteracy rate	2.1%

Fig. 1. Location, population composition and basic indicators of Tres Lomas.

Thirty two trained pollsters administered the questionnaire to a sample of 522 adults randomly selected from the entire population of Tres Lomas. Respondents were surveyed in their homes and data were processed in a single computer center.

Direct Measurement of Anthropometric and Laboratory Parameters

One hundred adults out of the original 522 participants were randomly selected to undergo direct anthropometric determinations, physical examination and ECG. The procedures were conducted by physicians and specially trained technicians. The following biometric data were obtained:

1. Blood pressure.
2. Heart rate (in a sitting position).
3. Waist circumference (measured in supine position with a metric measuring tape at the level of the belly button).
4. Weight and height (measured with a weight and height scale)
5. Body mass index.
6. Electrocardiogram.

The following lab tests were performed on the same sample of 100 subjects:

1. Fasting blood sugar (FBS): measured in heparinized plasma by the glucose oxidase method.
2. Total serum cholesterol (Chol.): determined by cholesterol oxidase.
3. Serum HDL-cholesterol (HDL-C): determined by cholesterol oxidase and precipitation method.
4. Triglycerides (TG): serum and enzymatic colorimetric test.

Al the samples were processed in a Reference and Standardization Laboratory of Clinical Biochemistry in Tres Lomas.

Assessment of Global Cardiovascular Risk

Global cardiovascular risk was defined as the risk of developing coronary heart disease, either a non-fatal event or coronary death, over the next 10 years in healthy individuals, by the score from Second Joint Task Force of European and Other Societies on Coronary Prevention, (6) that considers gender, age, history of tobacco use, cholesterol levels, systolic blood pressure and the presence of diabetes mellitus. According to these scores, the sample of 100 subjects was classified in 5 risk levels at 10 years:

1. Low risk: 5%
2. Mild risk: 5% to 10%.
3. Moderate risk: 10% to 20%
4. High risk: 20% to 40%

Indicators Definitions

According to the instrument selected, indicators of risk factors were defined based on the documents of the PAHO" NCD Surveillance Toolkit: Risk Factors for Non-Communicable Diseases" and of the CDC. (7) Social and demographic characteristics were defined using the recommendations of the Permanent Home Survey from the INDEC. (5)

Study Design and Sample Size Determination

We used a random sample of housing units, and a survey respondent was randomly selected from household members aged 18 years or older. Then, 100 individuals were randomly selected from this sample to perform direct anthropometric and biochemical measurements. The sample size was determined assuming the lowest prevalence expected for all risk factors; the results of this survey are accurate at the 95% confidence level plus or minus 2 percentage points. Thus, we estimated a sample size of 460 individuals plus 15% to cover for missing respondents.

Ethical Considerations

The application of the questionnaire, as well as anthropometric and biochemical determinations took into account the universal ethical principles and rules considered for descriptive epidemiological studies with interventions of low risk (anthropometric measurements and blood sampling). The study counted with the support and collaboration of the health care authorities of the county of Tres Lomas considering that the survey was important in terms of local health care. Finally, survey respondents gave individual consent for data collection and lab tests determinations.

Statistical Analysis

Data are expressed as percentages, mean and 95% confidence interval according to the sample size. Hypothesis testing for large samples (standard error of the difference) was used to make comparisons between the average prevalence nationwide. We used a level of significance of 1% to reduce the alpha error in large samples.

RESULTS

The survey was conducted by the authorities of the county of Tres Lomas and supervised by the Research Area of the Argentine Society of Cardiology. Five hundred and twenty two participants were randomly interviewed and the different anthropometric and biochemical parameters were measured according to the survey design shown in Figure 2.

Sociodemographic Data

Table 1 presents the distribution by gender, age, education level, and other basic socioeconomic factors.

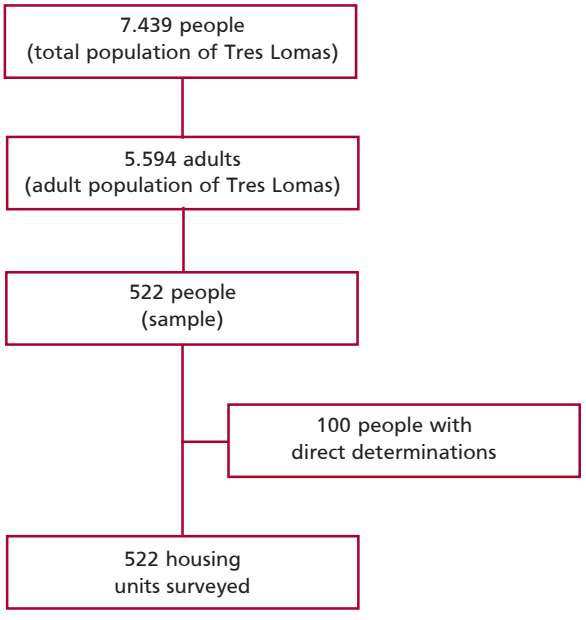

Fig. 2. Participants Flow Chart.

Mean age was 48.7± 17.0 years and marital status was as follows: married 57%, single 24%, divorced 7% and widowed 12%. Analysis of other basic socioeconomic factors revealed that 78.2% of the respondents had some kind of non public medical care coverage. When these data were compared with the national average results of the 2005 National Survey of Risk Factors, (1) the proportion of people that had only public medical coverage was lower in Tres Lomas than in the rest of the country (21.8% [18.3% to 25.3%] versus 34.9% [33.3% to 36.4%]; $p < 0.0001$).

General Anthropometric Data

Anthropometric data were as follows: average weight 72.7 kg (71.43-73.97 kg), average height 165.9 cm (165.1-166.7 cm), mean body mass index (BMI) 26.4 (25.9-26.9), average waist circumference 93.7 cm (92.5-94.9 cm) and hip circumference 101.8 cm (101.2-103.8 cm).

Table 1. Sociodemographic characteristics

	n = 522	%
Gender		
Male	214	41%
Female	308	59%
Age groups (years)		
< 29 years	82	15.7%
30-39	87	16.7%
40–49	90	17.2%
50–59	112	21.5%
> 60	151	28.9%
Education level		
Illiterate	2	0.4%
Primary level	285	54.6%
Secondary level	160	30.7%
Post-secondary level	46	8.8%
University level	29	5.6%
Socioeconomic factors		
- Property:		
House	176	33.7%
House and car	162	38.1%
Car only	24	5.1%
None	101	22.9%
- Coverage and access to medical care:		
Health insurance	279	53.9%
Prepaid health insurance	34	6.6%
PAMI (*Programa de Atención Médica Integral*, medical retirement plan)	92	17.8%
Only public medical care coverage	113	21.8%

Excessive weight, defined as the presence of a BMI of ≥ 25 kg/m²(overweight + obesity) was present in 58.4% (54.2-62.7%)of the population, while 20.7% (17.2-24.2%) were obese (BMI ³ 30 kg/m²) according to the answers of survey respondents. In this way, only 41.6% (37.4-45.8%) of survey respondents had a normal weight. When data were analyzed according to gender, the percentage of women with normal weight was greater 46.3% (39.6-53.0%) versus 29.9% (24.4-35.4%); $p = 0.00007$. The number of people with excessive weight and obesity were greater in the sample of 100 subjects who underwent direct measurement of BMI (62.2% y el 31.1%, respectively). The sample undergoing direct determinations was small; nevertheless, the values obtained with the survey might be modified by a conversion factor according to these results.

General Health Data

History of cardiovascular disease: myocardial infarction 2.1% (0.9-3.3%), stroke 1.6% (0.5-2.7%), peripheral vascular disease with intermittent claudication 0.23% (0.0-0.64%). The percentage of respondents with a history of coronary angioplasty was1.9% (0.7-3,1%), and 1.4% (0.4-2.4%) had undergone coronary artery bypass graft surgery. Insofar as **respondent's perception of his/her general health status** , 30.7% (26.7-34.7%) described that it was very good or excellent, 53.6% (49,3-57.9%) responded that it was good and it was fair or poor in the remaining 15.71% (12.6-18.8%) Symptoms of **anxiety or depression** were present in 14.4% (11.4-17.4%) of survey respondents and they currently were under therapy, while 13.3% (10.4-16.2%) perceived **job-related stress**, with sleep alterations, irritability and fatigue almost all the time.

Physical Activity

Total physical activity was assessed using a scale based on the following equation: total physical activity **MET-minutes/week :** 3.3 x walking minutes x walking days+4.0 x moderate-intensity activity minutes x moderate days + 8.0 x vigorous-intensity activity minutes x vigorous-intensity days (8); a score lower than 600 MET-minutes/week was considered low physical activity and a score greater than 3000 MET-minutes/week was regarded as the highest level of activity. **Moderate activities** were defined as those that caused a small increase in respiration rate, such as housekeeping, slow bicycle riding, recreational swimming or brisk walking, while **vigorous activities** were those that produced greater increase in breathing, for example: running, manual labor, sports (soccer or tennis). In consequence, those respondents who did not report any type of physical activity or not meeting any of the criteria for either of the previous categories were considered to be in the **low physical activity** category. In this way, the level of physical activity was low in 47.1% (42.8-51.4%) of survey re-

spondents, moderate in 44.3% (40.0-48.6%) and vigorous in only 8.6% (6.2-11.0%) of people interviewed.

Hypertension

The prevalence of hypertension diagnosed by a health care professional was 39.5% (35.3-43.7%). The percentage of persons whose blood pressure had been checked in the last year was 82.2% (78.9-85.8-5%); 10.5% (7.9-13.1%) had had their blood pressure checked more than one year before and 7.5% (5.2-9.8%) had never had their blood pressure checked or did not recall. Among hypertensive persons, 33.5% (29.5-37.6%) were not under treatment, 61.1% (56.9-65.3%) were receiving treatment with drugs, associated or not with diet, and 5.4% (3.5-7.3%) were only on diet. Among those respondents who answered they had no hypertension or were not aware of their blood pressure levels, direct blood pressure measurement revealed had high blood pressure in 19.6%; therefore, the real prevalence of hypertension might be about 52% In turn, 43.7% (39.4-47.9%) of survey respondents **added salt** to food after cooking.

Cholesterol

The percentage of people who had high cholesterol levels least once was 25.7% (22.0-29.4%). While 60.3% (56.2-64.5) of respondents had their cholesterol measured in the last year, in 15.7% (12.6-18.8%) of participants cholesterol measurement had occurred more than one year before and 23.7% (20.1-27.3%) had never had their cholesterol measured or did not recall. Among persons with hypercholesterolemia, 51.5% (43.0-60.0%) were not under treatment, 28.5% (20.9-36.1%) were receiving treatment with drugs associated or not with diet, and 20.0% (13.2-26.8%) were only on diet. Figure 3 shows the results of cholesterol and triglycerides levels in the sample of 100 individuals.

In this group, 20.5% had high levels of cholesterol or triglycerides, a percentage lower than the one reported in the survey; anyway, the percentage of persons under lipid-lowering treatment was 21.8% in this subgroup of persons with biochemical determinations.

Diabetes Mellitus

The prevalence of diabetes or hyperglycemia was 7.7% (4.8-9.2%); in addition, 3.1% of women had hyperglycemia during pregnancy. Blood sugar had been tested at least once in 55.9% (51.6-60.2%) of survey respondents; 50.2% (45.9-54.5%) had their glycemia tested in the last year, 13.5% (10.6-16.4%) more than one year before and 36.2% (32.1-40.3%) had never checked their blood sugar levels or did not recall. Blood sugar levels were also normal in the group of persons who had reported not to have diabetes and underwent biochemical determinations; thus the estimation obtained only with the survey was valid and consistent.

	Cholesterol	LDL	HDL	TG
Mean	196	126	43.3	138
SD	38.9	32.3	12.0	93.6
$Q_{25\%}$	169	103	34.8	87
$Q_{50\%}$	196	126	43.5	114
$Q_{75\%}$	223	151	51.0	162

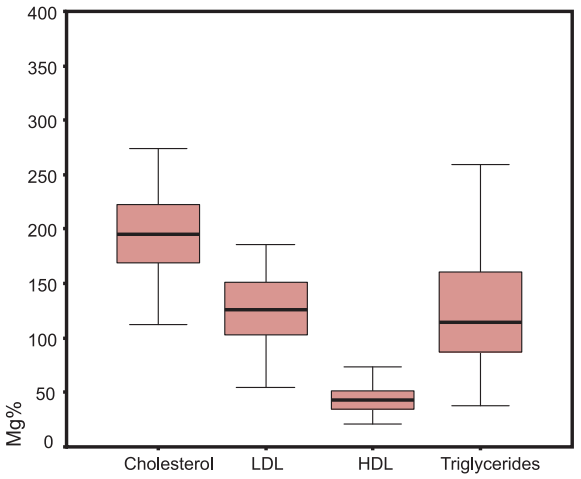

Fig. 3. Total cholesterol, LDL-cholesterol, HDL-cholesterol and triglycerides levels in the sample of 100 individuals.

Tobacco Use

The prevalence of current smoking in Tres Lomas was 27.7% (23.9-31.6); 20.6% (14.0-24.2%) of survey respondents smoked more than 10 cigarettes per day and 69.2% (61.7-76.7%) had considered quitting smoking. In addition, 49.0% (44.7-53.5%) of survey respondents had smoked at least once.

Nutrition

Healthy eating includes intake of fruit and vegetables 5 days per week or greater, use of polyunsaturated fats and limited salt intake. In this survey, 82.6% (79.3-85.9%) of the respondents ate fruit and vegetables at least 5 times per week, and 43.7% (39.4-47.9%) added salt to food after cooking. Vegetable oils, saturated fats and trans fats use was as follows: vegetable oil (polyunsaturated fats) 86.7% (83.8- 89.6%); olive oil (monounsaturated fats) 5.6% (3.6-7.6%); lard or suet, butter and margarine (saturated and trans fats) 7.7% (5.4-10.0%).

Electrocardiogram

Electrogradiographic findings in the sample of 100 subjects included: previous myocardial infarction (2.6% [0.0-5.7%]), signs of acute myocardial ischemia (1.6% [0.0-4.1%]), left ventricular hypertrophy (5.1% [0.8-9.4%]), atrial fibrillation (2.6% [0.0-5.7%]), and ventricular arrhythmias (2.6% (0.0-5.7%]).

Assessment of Global Cardiovascular Risk

Global cardiovascular risk (GCR) was estimated in the sample of 100 persons who underwent physical examination and laboratory testing. Table 2 shows the distribution of the different GCRs separated by gender and their corresponding 95% CI, in order to estimate the true values expected for the population of Tres Lomas.

Comparison between the Principal Indicators from Tres Lomas with the Average National Indicators

When the principal indicators nationwide are compared with those of Tres Lomas (Table 3), there were no differences in the percentage of individuals who perceived their quality of life was either fair or poor, had a low level of physical activity or added salt to food after cooking.

Anxiety or depression were less frequent in Tres Lomas compared to the general population nationwide. However, the prevalence of overweight and obesity was greater, showing this might be a possible work area for local public health interventions. Smoking rates are below the national average. Anyway, interventions focused on decreasing these rates are one of the most effective to reduce the burden of cardiovascular diseases in any population. The rate of diabetics who knew about their condition was significantly lower in Tres Lomas than the average for the country [7.7% (4.8-9.2%) versus 11.9% (10.9-12.8%); p < 0.0001]. Nevertheless, the real prevalence of the disease might be undervalued as 36.2% of survey respondents had never had their glycemia tested. Similarly, only 70% of diabetics were under medical therapy.

The prevalence of people who knew they had hypertension was similar in Las Lomas and in the country [37.6% (33.4-41.8%) versus 34.4% (33.3-35.5%), p = 0.069]. The number of people who had not had their blood pressure checked in the last year was lower in Las Lomas (20% versus 30%). The prevalence of hypercholesterolemia in people who had checked their cholesterol levels was similar [24.5% (20.8-28.2%) versus 27.8% (26.5-29.0%); p = 0.042], for a proposed detection threshold of 0.01; however, 30% of people had never had their serum cholesterol tested. Only half of those with hypercholesterolemia were under lipid-lowering therapy.

DISCUSSION

The results of this first survey in the population of Tres Lomas show significant differences in the prevalence of cardiovascular risk factors with the general average reported for Argentina. The prevalence of diabetes, smoking habits and depression was lower; however, overweight and obesity were more prevalent. Blood pressure check was more frequent in Tres Lomas; nevertheless, the number of direct determinations of glycemia and serum cholesterol levels was significantly lower than expected. Intake of fruit and vegetables was greater than nationwide. At least one-fifth of the population of Tres Lomas (a value

Table 2. Estimation of global cardiovascular risk for the population of Tres Lomas separated by gender. Values are expressed as percentage of population at risk with their corresponding 95% CI

	Low risk	Mild risk	Moderate risk	igh risk
Men	26% (13.8-38.2)	30% (17.3-42.7)	22% (10.5-33.5)	22% (10.5-33.5)
Women	40% (26.4-53.6)	38% (24.5-51.5)	20% (8.9-31.1)	2% (0.0-5.9)
Total	33% (23.8-42.2)	34% (24.7-43.3)	21% (13.1-28.9)	12% (5.4-18.6)

Table 3. Principal nationwide indicators compared with the population of Tres Lomas

Indicator	Prevalence in Tres Lomas	National prevalence	p
Public medical care coverage	21.8% (18.3-25.4)	34.9% (33.3%-36.4%)	< 0.0001
Fair to poor quality of life	15.7% (12.6-18.8)	19.9% (19.9%-20.7%)	0.0165
Depression	14.4% (11.4-17.4)	22.8% (21.8-23.7%)	< 0.0001
Low physical activity	47.1% (42.8-51.4)	46.2% (44.7-47.5%)	0.6712
Sobrepeso y obesidad	58.4% (54.2-62.7)	49.1% (47.9-50.2%)	< 0.0001
Overweight and obesity	20.7% (17.2-24.2)	14.6% (13.8-15.4%)	0.0001
Low intake of fruit and vegetables	17.4% (14.2-20.7)	35.3% (34.0-36.5%)	< 0.0001
Adding salt to food	43.7% (39.4-47.9)	45.2% (43.9-46.4%)	0.4848
BP checked in the last year	82.2% (78.9-85.5)	68.4% (67.2-69.4%)	< 0.0001
Serum cholesterol checked in the last year	60.3% (56.2-64.5)	72.8% (71.3-74.4%)	< 0.0001
Blood sugar checked in the last year	50.2% (45.9-54.5)	69.3% (68.0-70.5%)	< 0.0001
Current smoking	27.7% (23.9-31.6)	33.4% (32.1-34.5%)	0.0054

BP: Blood pressure.

lower than the 95% CI) presented a moderate to high GCR of developing a non-fatal coronary event or death over the next 10 years.

In general, the results of the survey show that the prevalence of the indicators assessed was lower compared to the average of the country. Nevertheless, although the number of persons whose blood pressure had been checked was adequate, one-third of hypertensive people were not under therapy; in addition, half of the persons with dyslipemia were not receiving any treatment. The prevalence of diabetes was significantly lower compared to the average of the country according to the results of lab tests performed in subjects randomly selected; however, it should be noted that a single fasting blood sugar measurement is not enough to diagnose diabetes. Thirty percent of diabetics were not under treatment.

Estimation of GCR based on the Second Joint Task Force of European and Other Societies on Coronary Prevention (6) demonstrated that 33% of the population of Tres Lomas might be exposed to a 10-year risk of a coronary event greater than 10% (moderate to high risk). The 2005 ENFR (1) reported a risk of 28.4% nationwide according to the criteria of the ATP III. (9) This difference may be due to the fact that the ENFR might have underestimated the real risk, as the authors have recognized; even more, the ENFR had not performed direct measurements or determinations of cholesterol levels.

It is essential to be aware of the prevalence of risk factors and of the burden of a disease in a population, not only to know the health status of the community, but also to make a projection of the rates of future events, and to draw up a plan for the interventions necessary to reduce those rates and improve the quality of life of the population. Additionally, local surveys and measuring tools are useful to compare the results obtained with a standard and, eventually, associate those factors that justify the differences found.

Perspectives

The study of Tres Lomas might lay local epidemiological foundations to evaluate the tendencies and the future development of all risk factors in this population. The validity of the GCR estimated in this first survey will be confirmed once the different cardiovascular events occur. Finally, the implementation of programs for health promotion and prevention of these non-communicable diseases might impact on the burden of risk factors and disease in the population of Tres Lomas. In particular, efforts should be made to reinforce those prevention areas with greater prevalence of risk factors compared to the general average nationwide.

Study Limitations

Despite direct anthropometric and biochemical measurements corrected the data obtained only with the survey, the confidence intervals were wide due to the small number of the sample and, therefore, the estimation of the true prevalence of these data in the whole population of Tres Lomas is not precise. Naturally, the small sample size was due to economic and logistic limitations. Although we used a random sampling based on the number of urban housing units in the county, the population was not stratified by sex or age according to the population pyramid. Anyway, random sampling would rectify these deficiencies.

CONCLUSIONS

The prevalence of diabetes, smoking habits and depression was lower in Tres Lomas, although overweight and obesity were more frequent than the country's average. Blood pressure check was more frequent and direct determinations of glycemia and cholesterol levels were lower than expected. At least one fifth of the population presented a moderate to high GCR of developing a non fatal coronary event or death over the next 10 years. This first survey might be useful for implementation of community programs for health promotion and prevention and, in turn, might serve as a reference for future epidemiological surveillance.

RESUMEN

Prevalencia de factores de riesgo y riesgo cardiovascular global en la población de Tres Lomas

Introducción

La mortalidad atribuida a las enfermedades cardiovasculares se encuentra en primer lugar y en aumento en los países en vías de desarrollo. En la Argentina, las enfermedades cardiovasculares producen, junto con el cáncer, más del 50% de las muertes anuales. En contraposición a las enfermedades infecciosas, éstas se denominan genéricamente enfermedades no transmisibles y se ha demostrado que son prevenibles en gran medida a través del control y el manejo de los llamados factores de riesgo para el desarrollo de enfermedades cardiovasculares. Es por ello que la información sobre la prevalencia y la variación en el tiempo de estos factores de riesgo es fundamental para realizar una vigilancia epidemiológica del problema de las enfermedades cardiovasculares en la población y, a su vez, para proponer acciones comunitarias preventivas.

Objetivos

Obtener información sobre los factores de riesgo cardiovascular en la población de Tres Lomas (Buenos Aires), calcular el riesgo cardiovascular global (RCG) y comparar estos resultados con los descriptos para toda la Argentina.

Material y métodos

Se entrevistaron al azar 522 adultos de Tres Lomas. Se utilizó el cuestionario para vigilancia epidemiológica de la OPS y se realizaron mediciones antropométricas. En 100 individuos se determinaron lípidos y glucemia para estimar el RCG, definido como probabilidad de desarrollar un evento

no fatal o muerte coronaria en los próximos 10 años. Por último, estas prevalencias se compararon con las estimadas a nivel nacional.

Resultados

Hubo menor prevalencia de diabetes (7,7% *versus* 11,9%; p < 0,0001), tabaquismo (27,7% *versus* 33,4%; p < 0,0054) y depresión (14,4% *versus* 22,8%; p < 0,0001), aunque más sobrepeso y obesidad que el promedio país (58,4% *versus* 49,1%; p < 0,0001). Aunque la medición de la tensión arterial fue más frecuente que el promedio (82,2% *versus* 68,4%; p < 0,0001), las determinaciones de glucemia (50,2% *versus* 69,3%; p < 0,0001) y de colesterol (60,3% *versus* 72,8%; p < 0,0001) fueron menos frecuentes que las esperadas. El consumo de frutas y verduras fue mayor que a nivel nacional (82,6% *versus* 64,7%; p < 0,0001). Por lo menos un quinto de la población presentaría un RCG moderado [21% (13,1-28,9%)] a alto [12% (5,4-18,6%)].

Conclusiones

En Tres Lomas se observó una prevalencia menor de diabetes, tabaquismo y depresión y más sobrepeso y obesidad que el promedio país. El control de la tensión arterial fue más frecuente que el promedio, aunque las determinaciones de glucemia y colesterol fueron más bajas que las esperadas. Por lo menos un quinto de la población presentaría un RCG moderado a alto de sufrir un evento coronario o muerte en los próximos 10 años.

Palabras clave > Factores de riesgo - Cardiovascular - Vigilancia epidemiológica - Enfermedades no transmisibles

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BIBLIOGRAPHY

1. Ferrante D, Virgolini M. Encuesta Nacional de Factores de Riesgo 2005: Resultados Principales. Prevalencia de factores de riesgo de enfermedades cardiovasculares en la Argentina. Rev Argent Cardiol 2007;75:20-9.

2. Schargrodsky H, Hernandez-Hernandez R, Champagne BM, Silva H, Macchia A, et al. CARMELA assessment of Cardiovascular Risk in Seven Latin American Cities. Am J Med 2008;121:58-65.

3. Preventing chronic diseases: a vital investment. WHO global report, World Health Organization, 2005

4. Centers for Disease Control and Prevention Indicators for chronic disease surveillance. MMWR 2004;53(N° RR-11):1-89.

5. Instituto Nacional de Estadística y Censos. La nueva Encuesta Permanente de Hogares, 2003. Disponible en http://www.indec.mecon.gov.ar/nuevaweb/cuadros/4/ Metodología_ EPHCContinua.pdf#search%22definiciones %20EPH%22

6. Wood W, De Backer G. Prevention of coronary heart disease in clinical practice: recommendations of the Second Joint Task Force of European and Other Societies on Coronary Prevention 1,2. Atherosclerosis 1998;140:199-270.

7. Herramienta para Vigilancia de ENTs: factores de Riesgo para Enfermedades no Transmisibles. Disponible en: http://www.paho.org/Spanish/AD/DPC/NC/ncd-surv-tools.htm

8. Scoring Protocol for the IPAQ long and short. Disponible en www.ipaq.ki.se/dioads/IPAQLSScoring. Protocolsnova.pdf

9. Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). National Cholesterol Education Program National Heart, Lung, and Blood Institute National Institutes of Health, NIH Publication N° 01-3670, May 2001.