ORIGINAL ARTICLE

Evaluation of Cardiovascular Variables in a Calchaquí Population in the Middle and High Mountains of Tucumán

Evaluación de variables cardiovasculares en una población calchaquí de media y alta montaña de Tucumán

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ABSTRACT

Background: The Quilmes community includes 2,400 inhabitants of the middle and high mountains of Tucumán (1,800 to 4,000 meters above sea level). The purpose of the present study was to know their cardiovascular health status.
Methods: A cross-sectional descriptive quantitative investigation was carried out in people belonging to the Quilmes community who voluntarily attended the planned evaluation on September 27-29, 2018.
Results: Two hundred and two settlers were studied (125 women and 77 men; 48±1.4 years), 23% of them had hypertension (HTN); 14% were smokers; 4.9% had diabetes; 18% had dyslipidemia (DLP) and 25% usually consumed alcohol (1.0 ± 0.4 L/day). Also, 29% were overweight and 36% obese. High blood pressure (BP) was recorded in 48 individuals at the time of the study.
Blood pressure decreased in the third compared to the first measurement, whereas heart rate increased in the third assessment (74±1 beats per minute vs. 77±1; p <0.01). Oxygen saturation (95.0±0.2%) was negatively correlated with age (Pearson r: -0.266; p <0.001). In individuals with normal BP, ultrasound E/ratio was higher (1.2±0.0) and left ventricular posterior wall thickness was lower (8.5±0.5 mm) than in those with elevated BP (0.92±0.1 and 9.0±0.3, respectively, p <0.001). Twenty-four percent of individuals had atherosclerotic plaques and 120 had DLP.
Conclusions: The Quilmes population presents a prevalence of cardiovascular risk factors similar to that of urban centers, which could lead to an increase in cardiovascular morbidity and mortality in the coming years.

Key Words: Cardiovascular Diseases - American Native Continental Ancestry Group - Indians, South American - Altitude Sickness / epidemiology

RESUMEN

Introducción: La comunidad Quilmes (Tucumán) abarca 2400 habitantes de media y alta montaña (1800 a 4000 metros sobre el nivel del mar). El objetivo del presente trabajo fue conocer su estado de salud cardiovascular.
Material y métodos: Se efectuó una investigación cuantitativa descriptiva transversal en personas pertenecientes a dicha comunidad que asistieron voluntariamente en los días 27 a 29 de septiembre de 2018 a la evaluación prevista.
Resultados: Se estudiaron 202 pobladores (125 mujeres y 77 varones; 48±1,4 años). El 23% de ellos tenían hipertensión arterial (HTA); un 14% eran tabaquistas; el 4,9% tenían diabetes (DBT); el 18% presentaba dislipidemia (DLP); el 25% consumía alcohol rutinariamente (1,0±0,4 L/día). Asimismo, el 29% presentaba sobrepeso y el 36% obesidad. Se registró presión arterial (PA) elevada en 48 personas al momento del estudio.
La PA disminuyó en la tercera toma con respecto a la primera, pero la frecuencia cardíaca aumentó en la tercera toma (74±1 latidos por minuto vs. 77±1; p<0,01). La saturación de O2 (95,0±0,2%) se correlacionó negativamente con la edad (Pearson r: -0,266; p<0,001). En los pobladores con PA normal, la relación E/A determinada ecográficamente fue mayor (1,2 ± 0,0) y el espesor de la pared posterior del ventrículo izquierdo fue menor (8,5± 0.5 mm) que en aquellos con PA elevada (0,92 ± 0,1 y 9,0 ± 0.3, respectivamente, p<0,001). El 24% presentó placas ateroscleróticas y 120 pobladores presentaron DLP.
Conclusiones: La población Quilmes presenta una prevalencia de factores de riesgo cardiovascular similar a la de centros urbanos, los que podrían llevar en los próximos años a un incremento de la morbimortalidad cardiovascular en esta población.

Palabras Claves: Enfermedades Cardiovasculares - Grupo de Ascendencia Continental Nativa Americana - Indios Sudamericanos - Mal de Altura/epidemiología

Rev Argent Cardiol 2021;89:20-26. http://dx.doi.org/10.7775/rac.v89.i1.19095

Received: 07/01/2020 – *Accepted:* 10/19/2020

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INTRODUCTION

The Quilmes community, settled in the Calchaquíes Valleys, province of Tucumán (national route 40, km 4292) comprises 2400 inhabitants of separate localities, with specific historical, geographical and sociocultural characteristics.

They are descendants of the Quilmes people ("Los Bravos") (1), who settled in the Calchaquí Valleys at the end of the 15th century, reaching a great sociocultural development, with agriculture and hunting activities. In 1667, the Spanish army achieved its surrender and exile by besieging and poisoning the water.

The localities included in this region are difficult to access due to the land characteristics. Its settlers are led by a chief, guided by a council of elders. Traditions and respect for Mother Earth (Pachamama) are transmitted to the children.

Cardiovascular diseases (CVD) are the leading cause of morbidity and mortality in Argentina (2) and worldwide (3). Historically, the prevalence of CVD and diabetes (DM) was higher in urban areas than in rural areas (4). At present, this difference is controversial, due to the decrease in survival and the increase in CVD in indigenous communities of Australia, New Zealand and the United States (5).

The assessment of cardiovascular risk factors (CVRF) in isolated populations is not frequent and constitutes a challenge, due to the difficult geographical and cultural access. A study of 139 Carib and Arawak indigenous inhabitants (Colombia) (6) revealed a prevalence of 58% overweight. Similar data were found in 488 Embera-Chamí indigenous people (Colombia) (7). In an Aymará indigenous community of 276 individuals (Chile), a low prevalence of hypertension (HTN) and DM (8) was reported. In Argentina, a prevalence of 38% metabolic syndrome was demonstrated in Toba Indians (n=275). (9)

The purpose of the present work was to know the cardiovascular health status of the Quilmes community.

METHODS

A cross-sectional descriptive quantitative research was carried out in the Quilmes community, in people who voluntarily attended a scheduled evaluation between September 27-29, 2018. Before that date, the planned cardiological evaluation was disseminated through radio and television media and with community leaders. People not belonging to the Quilmes community and residents with sensory, cognitive or motor disabilities who could not collaborate were excluded from the evaluation.

School No. 213 "Cacique Martín Iquin" was established as an operational base, where 6 health offices were implemented:

Office 1: Routine laboratory tests. The samples were processed at the Tafí del Valle hospital. Creatinine clearance was estimated using the MDRD410 formula.

Office 2: A guided cardiovascular survey was carried out (ANNEX II). The presence of HTN, DM and dyslipidemia (DLP) was considered if the resident answered affirmatively in the survey.

Office 3: Weight (kg), height (cm) and waist (cm) and neck (cm) circumference were recorded, and body mass index (BMI) was estimated. A waist circumference of up to 88 cm in women and up to 102 cm in men was considered normal. A neck circumference up to 43 cm (women and men) was deemed normal. According to BMI, the residents were considered to be undernourished (BMI less than 18.5), with adequate weight (BMI: 18.5 to 24.9), overweight (BMI: 25.0 to 29.9) or obese (BMI greater than 29.9). Blood pressure was measured with a digital blood pressure monitor (Omrom® 7120), according to the guidelines of the Argentine Consensus on Arterial Hypertension (11): 3 times, 1 minute apart. Oxygen saturation level and heart rate (bpm) were assessed with a digital saturation meter (Contec® CMS50N).

Office 4: A simultaneous 12-lead digital electrocardiographic recording was performed during 3 minutes (Jotatec® TaurusTouch). The recordings were stored as files for later off-line analysis.

Office 5: A color Doppler echocardiography (Esaote-MyLab 30 Gold) was used to record, in each case, dimensions (in mm) and areas (in cm^2) of the cardiac structures, and the left ventricular ejection fraction (LVEF) was calculated using the Simpson Biplane method. Cardiac and tissue Doppler measurements were performed.

Office 6: A Doppler ultrasound of the neck and ileofemoral vessels (EsaoteMyLab 30 Gold) was performed. The presence and number of atherosclerotic plaques and whether they generated significant hemodynamic obstructions was recorded.

Definitions were established to consider presence of HTN, DLP, DM, overweight, obesity, adequate weight, malnutrition, increased waist/neck circumference, and scarce/adequate physical activity.

Statistical analysis

Results were expressed as mean±standard deviation. Statistical analysis was performed using the Statistica 5.0 program. Student's t test; ANOVA with Newman Keuls post-hoc test, Pearson's correlation coefficient (Pearson's r) or the chi square test ($\chi 2$), were used as necessary. The results were considered significant with a probability <5% ($p < 0.05$).

Ethical considerations

All participants gave the corresponding oral and written informed consent to access participation in this study.

RESULTS

A total of 202 residents (125 women and 77 men), with mean age of 48±1.4 years (range: 16 to 89 years) attended the evaluation. Table 1 shows anthropometric variables of the study population differentiated by sex. There were no differences in age distribution between men and women. Figure 1 shows the participants' place of origin. It should be noted that 15 residents came from isolated areas that are difficult to locate on the map.

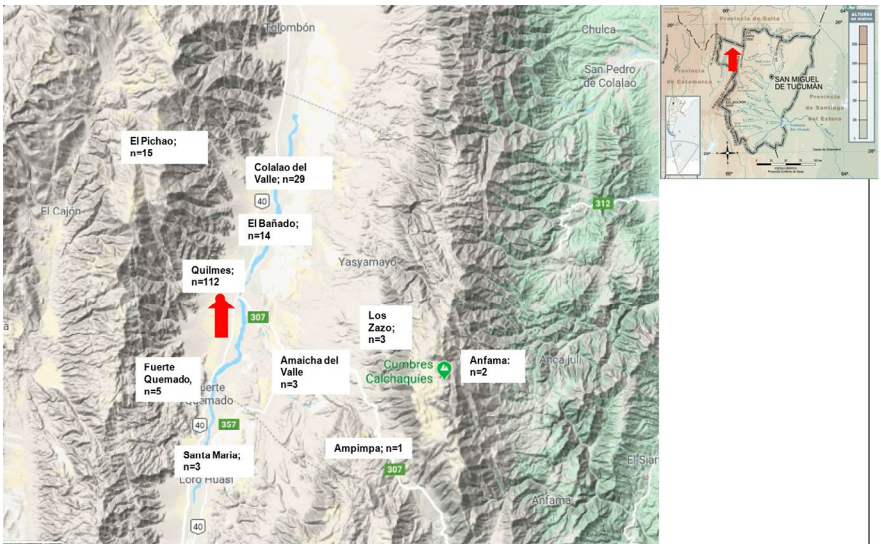
Working and educational status: Thirty-one percent of the subjects evaluated carried out household chores; 27% had active work; 21% were retired and 20% did not have a stable job. Also, 11% were illiterate; 58% had primary education; 23% had accessed to secondary education and 8% had tertiary or university studies, with no differences between men and wom-

Table 1. Quantifiable echocardiographic and cardiac Doppler findings

	Variable	Value
Long parasternal axis dimensions	LVDD (mm)	43.08±0.43
	LVSD (mm)	26.10±0.38
	LVFS (%)	36.28±0.58
	IVST (mm)	9.24±0.2
	PWT (mm)	8.65±0.4
	LVOT (mm)	19.86±0.9
	Ao-root (mm)	28.57±0.5
	Ao-Op (mm)	18.66±0.4
	Left-A (mm)	35.7±0.5
	LVM (mm)	135±9
	LVM index (%)	7.00±5
Doppler	PVAT (mseg)	1.14±0.05
	Transmitral	0.98±0.3
	flow E wave (m/seg)	1.08±0.4
	A wave (m/seg)	18.22±0.7
	LVOT VTI (cm)	1.23±0.02
	VmaxAoR (m/seg)	2.06±0.05
LV free wall tissue Doppler	VmaxTR (m/seg)	1.64±0.3
	S wave (cm/seg)	1.81±0.29
	e´ wave(cm/seg)	0.50±0.1

LV: left ventricular; Ao: Aortic; Vmax: Peak velocity; LVDD: LV diastolic diameter; LVSD, LV systolic diameter; LVFS: LV fractional shortening; IVST: interventricular septal thickness; PWT: posterior wall thickness; LVOT: LV outflow tract diameter; Ao-root: aortic root diameter; Ao-Op: Aortic opening diameter; Left-A: Left atrial anteroposterior diameter; LVM: LV mass; PVAT: Pulmonary velocity acceleration time; LVOT VTI: LV outflow tract velocity-time integral; VmaxAoR: Vmax of aortic regurgitation; VmaxTR: Vmax of tricuspid regurgitation.

Fig. 1. Participants' place of origin



The red arrow indicates the location of Cacique Martín Iquin school. The map on the right indicates the location in the province of Tucumán

en. In people over 20 years of age, the level of education was negatively correlated with age (illiterate: 63.4±3.4 years; primary education: 53.4±1.6; secondary education: 36.5±2.5; tertiary education: 42.9±4.5; p <0.01).

Medical coverage: In 56% of cases. the inhabitants did not have medical coverage, so they depended on the public health system for their care; 27% had provincial social work coverage, 16% belonged to the National Institute of Social Services for Retirees and Pensioners (PAMI) and only 1% had prepaid medicine coverage.

Mobile telecommunication: Seventy-eight percent of individuals had a mobile phone, which was used 4.0±0.2 hours/day, mostly for communication (87% to make or receive calls; 80% to make or receive text messages and 65% for social networks). Twenty-two per cent of the population had no mobile phone, a

fraction that coincided with the oldest group (45±1 years; n=157 vs. 61±3 years; n=45; p < 0.001 with and without mobile phone, respectively).

Presence of CVRF: No HTN was reported by 61% of subjects; 16% did not know whether they had HTN and 23% were known to be hypertensive. In 79% of cases, residents with HTN were not under medical treatment while 68% of the study population had had at least one Blood Pressure (BP) control in the last year.

A total of 14% of the population were smokers (mean 4.2±1.2 cigarettes/day/person) and 9% were ex-smokers. Mean age of smoking onset was 18.9±1.3 years.

Diabetes was present in 4.9% of cases and absent in 70.3% while 24.8% did not know whether or not they were diabetic. However, 6.4% of the study population received hypoglycemic drugs and 28% had carried out at least one blood glucose control in the last year.

Eighteen percent of subjects presented DLP; 41% did not have it and the other 41% did not know whether or not they had DLP, while 27% had had a lipid panel test in the last year.

Twenty-five percent of the population indicated that they routinely consumed alcohol, with a mean intake of 1.0±0.4 L/day.

Physical activity: Physical activity (at least walking 30 minutes/day) was reported by 55% of inhabitants with a mean frequency of 3.5±1.6 times per week.

Eating habits: Flour consumption was 257±11.4 g/day/person; meat (including beef, goat, swine and poultry), 224±7.8 g/day/person and fruit 1.6±0.07 units/day/person.

Anthropometric variables: Weight and height were higher in men and BMI was similar in both sexes, with adequate weight in 34% of the population, overweight in 29%, obesity in 36% and undernourishment in 1%.

The neck circumference was greater in men than in women, while the waist circumference was similar: 39% of the men and 63% of the women had an increased neck circumference $\chi 2$: 29.7; p <0.001). Thirty-four percent of men and 73% of women presented increased waist circumference ($\chi 2$: 10.7; p <0.001).

Mean heart rate was 75.7±0.9 bpm, and mean systolic and diastolic BP 124±1/77±1 mmHg, with a differential BP of 48±1 mmHg and a mean BP of 93±1 mmHg. In the control carried out, 48 individuals had elevated BP and were older (60±2 years vs. 45±1 years; p <0.001).

Blood pressure decreased in the third measurement compared with the first: systolic BP (SBP): 1st reading: 129±1 mmHg vs. 3rd reading: 121±1 mmHg; p <0.01 and diastolic BP (DBP): 1st reading: 79±1 mmHg vs. 3rd reading: 76±1 mmHg; p <0.01. However, heart rate increased: 1st reading: 74±1 bpm vs. 3rd reading: 77±1 bpm; p <0.01.

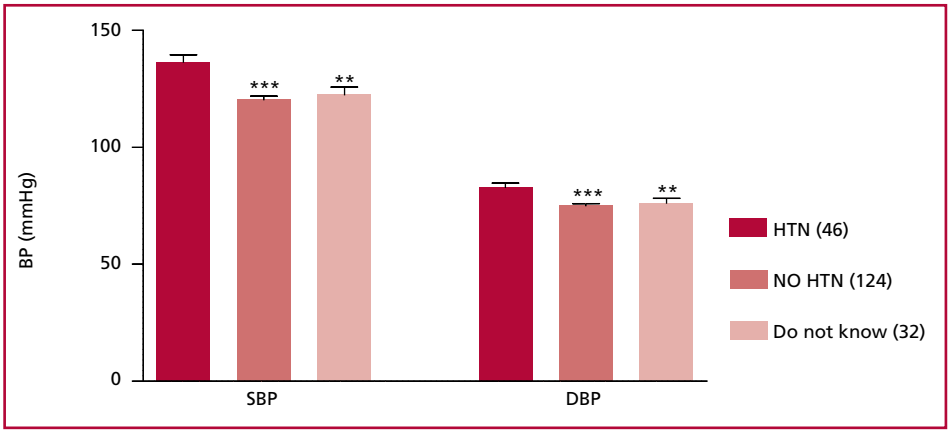
The age of the settlers was positively correlated with SBP (Pearson's r: 0.446; 95% CI: 0.329 to 0.551; p <0.001) and DBP (Pearson's r: 0.282; 95% CI: 0.150 to 0.405; p <0.001).

SBP and DBP values were higher in those who were known to be hypertensive compared with those who were unaware of this condition or were not hypertensive (Figure 2).

O2 saturation was lower in older residents (Pearson's r: −0.266; 95% CI: −0.390 to −0.132; p <0.001).

Electrocardiographic findings: Sinus heart rhythm was present in 198 participants (98%); 2 had atrial fibrillation, 1 low atrial rhythm, and 1 atrioventricular junction rhythm. The QRS axis was normal in 186 (92%) participants, indeterminate in 3 and abnormal in 13. There were P wave alterations in 24 (12%) inhabitants and in the QRS complex in 13 (7%), including complete right bundle branch block, signs of left ventricular hypertrophy, complete left bundle branch block and nonspecific abnormalities. The QT interval was prolonged in 6 inhabitants (3%), always accompanied by other changes in the ECG.

Echocardiographic findings in long paraesternal axis are presented in Table 1.



SBP: systolic blood pressure. DBP: diastolic blood pressure. HTN: residents who know they have hypertension. No HTN: residents who know they do not have hypertension. Don't know: residents who do not know whether they have hypertension. ***: p <0.001 vs. HTN; **: p <0.01 vs. HTN. One-way ANOVA. The number of settlers (n) is indicated between parentheses.

Fig. 2. Blood pressure status

Aortic regurgitation was identified in 11% of the population (age: 67±4 years) and tricuspid regurgitation in 43%. A total of 29 people had aortic valve sclerosis (age: 71±2 years) and 13 had mitral valve calcification (age: 74±3 years). The residents who presented elevated BP at the time of the examination showed abnormal E/A ratio (normal BP: 1.192±0.0 vs. elevated BP: 0.92±0.1; p <0.001) and increased LV posterior wall thickness (normal BP: 8.5±0.5 mm vs. elevated BP: 9.0±0.3 mm; p <0.001), with no changes in interventricular septal thickness.

Vascular Doppler ultrasound findings: Twenty-four percent of the inhabitants presented plaques in the neck vessels and 18% in the ileofemoral region. None of the plaques had significant obstruction criteria, and 50% were calcified.

Laboratory findings: Blood test values were within normal limits (Table 2). Men had increased hematocrit levels (women: 44±0.2% vs. men: 48±0.4%; p <0.001), hemoglobin (women: 15±0.1 g/dl vs. men: 16±1.0 g/dl; p <0.001) and red blood cells (women: 4.56±0.03 million/mm3 vs. men: 5,0±0,04 million/mm3; p <0.001). Six residents presented high blood glucose (>126 mg/dl) and 120 presented some lipid panel value compatible with DLP (total cholesterol >200 mg/dl; HDL<40 mg/dl or triglycerides >150 mg/dl). Estimated creatinine clearance was 86.7±1.3 ml/min. A negative correlation was found between creatinine clearance and the age of the settlers (Pearson r: −0.7005; 95% CI: −0.7662 to −0.6201; p <0.001).

DISCUSSION

The main finding of this work is that the Quilmes community, despite being far from urban centers, is overweight, performs little physical activity and has an altered lipid profile (characteristics associated with urban lifestyles). Women presented greater central obesity, despite having a BMI similar to that of men. Other authors have already indicated that the main CVRF in indigenous populations is overweight (6-8), even in pediatric populations (12). The mechanisms involved are still under study. In the present work, it is suggested that the overweight of the Quilmes population is due to the confluence of different factors, which include a "westernization" of the diet, changes in the means of locomotion (greater use of motorcycles) and job insecurity. This tendency to be overweight could be compensated by the greater physical activity that they must carry out, due to the topographic characteristics and the scarce means of transportation. These hypotheses must be studied in the future.

The fact that they consume mostly flours and meat would indicate a westernization of the diet (13). The leaders of the place (chief, communal delegate, health agents) corroborated that the current diet consists, above all, of flours, meat and soft drinks, with scarce fruits and vegetables, which highlights the difficult access to fresh food and the absence of family gardens. Since this work was directed to CVRF, we did not look into the nutritional variables.

The unusual use of mobile telephones reinforces the idea that the Quilmes population does not use electronic media for recreational purposes.

One thing to keep in mind is that the group studied had few illiterate settlers, and the younger population were the most educated. This indicates a generational change that could positively impact on the quality of life in the near future.

Regarding CVRF, it is observed that the prevalence of HTN is lower than that described in the RENATA 2 study (14) (Quilmes population: 23% vs. RENATA 2: 36%; (χ2: 14.4; p <0.01) and the treatment of patients with HTN was also lower (Quilmes population: 21% vs. RENATA 2: 55%; (χ2: 20.7; p <0.01) (14). The glycemic control in the last year was lower than that described for Argentina (3) (Quilmes population: 28%

Table 2. Laboratory Findings in the Study Population

	Variable	Value
White blood cells	Value (units/mm3)	7110.5±123.3
	Neutrophils (%)	45.2±0.8
	Eosinophils (%)	5.3±0.2
	Basophils (%)	0.2±0.2
	Lymphocytes (%)	44.3±0.9
	Monocytes (%)	4.7±0.1
Ionogram	Na (mEq/L)	139.4±0.2
	K (mEq/L)	4.0±0.0
	Cl (mEq/L)	103.1±0.5
Urea (mg/dL)		27.3±0.8
Creatinine (mg/dL)		0.8±0.0
Cholesterol	Total (mg/dL)	197.1±3.2
	HDL (mg/dL)	54.7±0.9
	LDL (mg/dL)	130.6±2.8
Triglycerides (mg/dL)		128.4±3.5
Blood sugar level (mg/dL)		89.8±1.8

Values are presented as mean ± standard error. Na, K, ClLDL y HDL

vs. Global Burden of Disease (GBD 2016): 79.1%; (χ2: 52.3; p <0.01). Regarding DM, a lower incidence was observed than that described for Argentina (Quilmes population: 4.9 vs. GBD 2016: 12%; (χ2: 52.2; p <0.01) (3). The fact that 6.4% received hypoglycemic medication would indicate that 1.5% have altered blood glucose levels, even without DM. Dyslipidemia was similar to that described for Argentina (2) (Quilmes population: 18% vs. 4th National Risk Factor Survey 28%; (χ2: 2.8; p: NS).

It should be noted that in the present study, the residents came voluntarily and were not randomized, as occurred in the RENATA 2 study. This could be a limitation, since some biases in the interpretation of the data cannot be ruled out.

Alcohol consumption was high, which was associated with environmental stress in other native populations (15). Sociocultural customs that favor this intake cannot be ruled out.

An interesting fact is that although BP decreased in the third measurement, heart rate increased, which would indicate an alert reaction to the studies that were carried out. This behavior should be investigated in future studies. No different data were found for laboratory, ECG, echocardiography, and arterial Doppler ultrasound compared with urban populations.

CONCLUSIONS

It can be concluded that the Quilmes population presents a prevalence of CVRF similar to that of urban centers, which could lead to an increase in cardiovascular morbidity and mortality in the coming years.

Conflicts of interest

None declared.

(See authors' conflicts of interest forms on the website/ Supplementary material)

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SUPPLEMENTARY MATERIAL

ANNEX I

* COMPLETE LIST OF SONQO CALCHAQUÍ PARTICIPANTS, 2018:

Dr. Majul Claudio; Dr. Quintana Luis Eduardo, Dr. Alderete Juan Rodrigo, Dr. Martinenghi Mario O.; Dr. Álvarez Carlos Eduardo; Dr. Abdo Leonardo Esteban; Dr. Neme Scheij Alfredo; Dr. Burgos Mario; Dr. Estofán Mariano; Dr. Soria Titto Fernando; Dr. Montoya Pablo Alberto Daniel; Dr. Zuviría Facundo; Dr. Ahualli Ciselle; Nr. Balderrama Mirta del Valle; Nr. Balderrama Ramón Oscar; Nr. Cata Fernanda Gabriela; Nr. Cecilio Romina Máxima; Nr. Condori Marina Alejandra; Nr. Corregidor Axel Nahir; Nr. Cruz Matías Jesús; Nr. Díaz Julissa Malena; Nr. Fernández Natalia Daniela; Nr. Flores Graciela del Valle; Nr. Fregenal Sabrina; Nr. González Marcela Elizabeth; Nr. González Verónica Jorgelina; Nr. Guerra María del Lujan; Nr. Gutiérrez Sixta Celestina; Nr. Lentini Leandro Gabriel; Nr. Lera Emilio Santos Ángel; Nr. López Ángela Irina; Nr. Mamani Daiana Judith; Nr. Mamani; Maximiliano; Nr. Mamani Natalia Beatriz del Valle; Nr. Moya Fátima Elizabeth; Nr. Nieva Gisell Georgina; Nr. Ocampo Rosa Soledad; Nr. Pérez Carolina Juana; Nr. Quipildor Débora Macarena; Nr. Rios Jonathan Gabriel; Nr. Yapura Aylen Aneli; Nr. Iglesias Norma Beatriz; Nr. Tejerina Víctor Osvaldo.

ANNEX II

DIRECTED CARDIOVASCULAR SURVEY

PATIENT N° ☐ **OFFICE 1: "Songo CALCHAQUI" CARDIOVASCULAR RISK FACTOR PROGRAM**

Name and Surname……..…**Date:**……..**Date of birth:**……..…..……**Sex:...**…...

Age:……..**Contact Phone/Mobile:**……..…**Address:**……..……..……..……

Educational attainment: Illiterate…….. Primary……Secondary……Tertiary……University……..

Occupation: Active……..…….. Retired……..……Not busy……..……..Housewife…..……..

Medical Coverage: Social Security…….. Prepaid……..PAMI…….……No coverage.....

Mobile	HTN	Smoking	Diabetes	Lipids	Alcohol consumption	Family history	Diet	Target organ injury	Pregnancy and perinatal	Medication
Have you got a mobile? YES / NO / Don´t know (DK)	Have you got HTN? Yes/No/DK	Do you smoke? Yes/No/ Ex-smoker	Are you diabetic? Yes/No/ Prediabetic/ DK	Do you have high cholesterol? Yes/No/DK	Yes/No/DK	Father; Is he alive? Yes/No/DK	Amount of flours / day ……..……	Did you have AMI? Yes/No/DK	How much did you weigh when you were born? ……../DK	How many pills do you take per day: ……..... Which: …… ……
Uses for calls/ messages/ Whatsapp	Did you take your BP in the last 12 months? Yes/No/DK	How many cigarettes a day?……	Did you control your blood sugar level in the last 12 months? Yes/No/DK	Did you control your cholesterol in the last 12 months? Yes/No/DK	How much do you drink per day?	At what age did he die? …….……	Amount of meat / day ……..……	Did you have stroke? Yes/No/DK	At how many weeks were you born? ……/DK	…… …… …… …… …… ……
Hours per day <1 1-3 h 3-6 h >6 h	Are you treated? Yes/No/DK	Since what age?……	Are you treated? Yes/No/DK	Are you treated? Yes/No/DK	Physical activity (PA) Makes PA 30 min/day Yes/No/DK	Mother; Is she alive? Yes/No/DK	Amount of fruit / day …….……	Did you receive dialysis? Yes/No/DK	Did you have HTN during your pregnancy? Yes/No/DK	…… ……..
	Do you add salt to your meals? Yes/No/DK	Another kind of cigars?	Do you add sugar? Yes/No How many spoons?.....		How many times a week? 0 1 2 3 4 5 or more	At what age did she die? ……..……	Observations: …… …… …… ……			