Trends in prevalence of hypertension in Argentina in the last 25 years: a systematic review of observational studies

Alejandro Díaz[1] and Daniel Ferrante[2]

ABSTRACT

Objective.   *To estimate the pooled prevalence of hypertension in Argentina and analyze the trends in the level of hypertension awareness, treatment, and control in the period 1988–2013.*

Methods.   *A bibliographic search was conducted in MEDLINE, SciELO, and LILACS databases for studies on hypertension prevalence conducted from 1988 to 2013. Eligibility criteria for inclusion were as follows: 1) population-based cross-sectional studies and surveys with blood pressure (BP) measurements in which prevalence of hypertension (or data to calculate it) was reported; 2) population-based studies conducted in adults from Argentina (people ≥ 18 years old); and 3) studies in which the hypertension condition was defined as average systolic BP ≥ 140 mmHg or diastolic BP ≥ 90 mmHg or as use of antihypertensive medications.*

Results.   *Twenty peer-reviewed publications were identified that reported the prevalence of hypertension for a collective total of 33 397 patients. The crude hypertension prevalence reported for Argentina was 32.34% (95% CI: 30.0–34.1). The prevalence of hypertension in people ≥ 65 years old was ≥ 71%. Only nine studies assessed the level of hypertension awareness, treatment, and control (57.9%, 49.5%, and 20.5% respectively). The most prevalent cardiovascular risk factor was sedentary habits (54.4%), central (abdominal) obesity (47%), overweight (43.1%), dyslipidemia (34.7%), smoking (27.4%), and diabetes (5.3%).*

Conclusions.   *Hypertension is of public health importance in Argentina, with evidence of considerable under-diagnosis and insufficient treatment and control. There is an urgent need to develop strategies to prevent, detect, treat, and control hypertension effectively countrywide.*

Key words   Epidemiology; hypertension; epidemiological surveillance; Argentina.

Hypertension is a major public health problem that is growing at epidemic proportions (1). The prevalence of hypertension is growing particularly fast in developing countries that are experiencing epidemiological transitions, economic improvement, urbanization, and longer life expectancy (2).

An analysis of world literature showed a greater prevalence of hypertension in Latin America and the Caribbean (LAC) versus other regions, with variations across LAC countries and between different regions within each country (1–3).

Recent data from the Pan American Health Organization (PAHO) show that hypertensive disease was responsible for 6.1% of deaths from diseases of the circulatory system in Argentina, with a specific mortality rate of 13.8 per 100 000 (4).

[1] National Council of Scientific and Technical Research (CONICET), Tandil, Argentina. Send correspondence to: Alejandro Díaz, alejandrounicen@gmail.com
[2] Health Promotion and Programs, Ministry of Health, Buenos Aires, Argentina.

In 2001 there was a financial crisis in Argentina that affected public health. The crisis was unique in that it was a major socioeconomic collapse that occurred in the absence of any natural disaster or war (5). After three years of continuing recession, it developed into a social and financial crisis that peaked in 2001 (6). The socioeconomic collapse had a devastating impact on the performance, quality, and effectiveness of the country's public health services, which were suddenly overwhelmed. Health care providers experienced serious problems related to the supply of basic inputs due to price increases generated by the deregulation of the pharmaceutical market (6, 7).

Epidemiological information is needed to determine the economic burden of hypertension and to optimize health resources allocation toward improved detection, treatment, and control. Although hypertension has been recognized as a major risk factor for cardiovascular morbidity and mortality in Argentina, nationwide studies assessing future trends in hypertension prevalence in Argentina are lacking. To help fill this gap, the aim of this study was to estimate the pooled prevalence of hypertension in Argentina and to analyze trends in the level of hypertension awareness, treatment, and control based on hypertension research published in Argentina over the last 25 years.

MATERIALS AND METHODS

This systematic review was designed and undertaken according to PRISMA (Preferred Reporting Items in Systematic Reviews and Meta-Analyses) guidelines (8, 9).

Literature search strategy

A bibliographic search was conducted in PubMed (international literature in the medical and biomedical areas); SciELO (Scientific Electronic Library Online); and LILACS (Latin American and Caribbean health sciences literature) for studies conducted in Argentina between January 1988 and December 2013. The following search terms, in English, Spanish, and Portuguese, were used: "hypertension," "high blood pressure," "prevalence," "cross-sectional studies," "epidemiology," and "Argentina." The results were supplemented by a manual search of relevant references cited in the articles found in the database search.

Data were extracted from the studies retrieved in the search by a single reviewer following a standard protocol and using standard data collection forms and a checklist. Full-text versions of all potentially relevant articles were downloaded from electronic databases or requested from the authors via e-mail. Two investigators selected the studies, extracted the data independently, cross-checked them, and resolved disagreements by consensus. Figure 1 summarizes the study retrieval and selection process. The selected studies were evaluated with an established tool described in a previous analysis on prevalence studies of hypertension in LAC (3).

Variables extracted included year of survey, city of study, mean age of participants, sampling methods, sample size, devices and methods for preparation and measurement of blood pressure (BP), definition(s) used for hypertension, and type of measuring device used. Data were entered into a pretested Microsoft Office Excel™ spreadsheet designed according to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology Statement) checklist (10).

Inclusion criteria

Eligibility criteria for inclusion were as follows: 1) population-based cross-sectional studies and surveys with BP measurements in which prevalence of hypertension (or data to calculate it) was reported; 2) population-based studies conducted in adults from Argentina (people ≥ 18 years old); and 3) studies in which the hypertension condition was defined as average systolic BP ≥ 140 mmHg or diastolic BP ≥ 90 mmHg or as use of antihypertensive medications (11).

FIGURE 1. Flowchart of study selection (identification/retrieval, screening, and inclusion) for systematic review of hypertension research, Argentina, 1988–2013
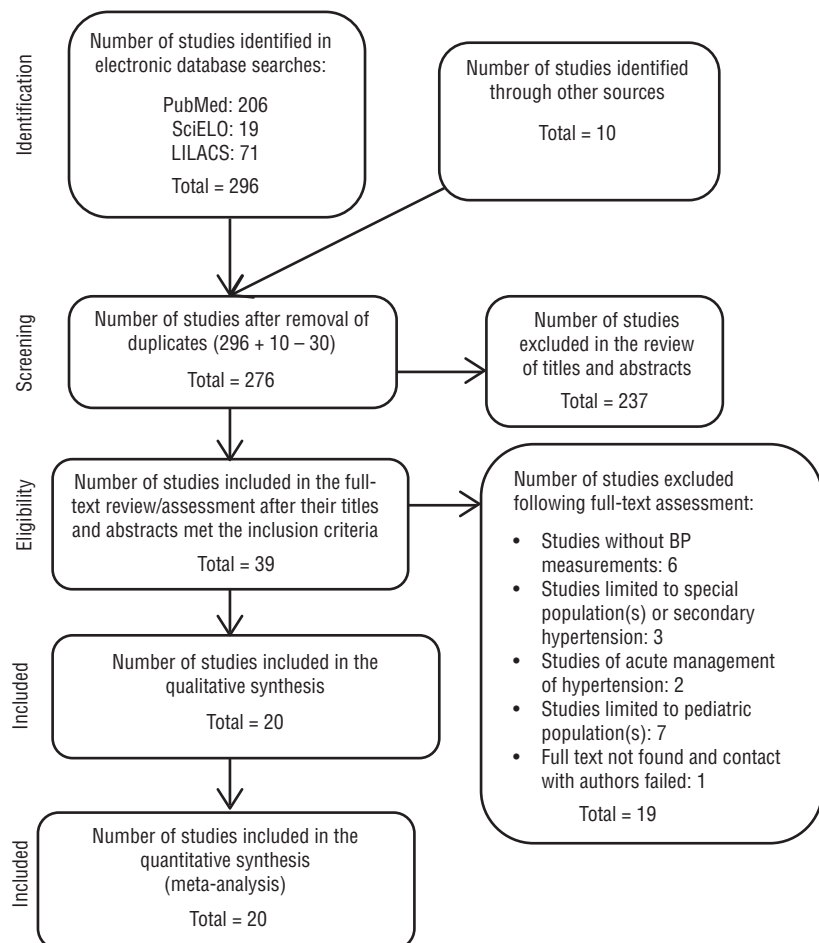
Exclusion criteria

Studies were excluded if 1) the participants were limited to special populations (e.g., pregnant women, those with secondary hypertension, patient (hospital-database), pediatric only (< 15 years old), adults only, or the elderly); 2) the results appeared in a previously selected study; or 3) different BP categories were used (based on the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (140/90 mmHg)) (to avoid inconsistency of outcomes) (11).

Global prevalence of hypertension and the percentages of those 1) with hypertension who had been previously diagnosed, 2) who were being treated, and 3) whose hypertension was controlled were also obtained. Any available information on the prevalence of 1) hypertension by gender, 2) high BP in the elderly population, and 3) the proportion of isolated systolic hypertension was also extracted. The prevalence of diabetes, hypercholesterolemia, smoking, overweight, obesity, and abdominal obesity was also evaluated (if available).

TABLE 1. Sample characteristics in 20 population-based studies included in systematic review of hypertension (HTN) research, Argentina, 1988–2013

| Lead author and year of study (reference) | Mean age (age group) | n | BP[a] meas. device | No. of meas.[b] / visits | HTN prevalence (%) | | | | HTN | | | DBT[d] (%) | Dyslipidemia (%) | Smokers (%) | Obesity / overweight (%) | CO[e] (%) |
					All	Women	Men	Elderly	Awareness (%)	Treatment (%)	Control[c] (%)					
Echeverría et al., 1988 (12)	ND[f] (15–75)	6 386	M[g]	2 / 1	32.7	30.9	35.3	74.3	ND	ND	1.6	ND	ND	ND	ND	ND
Piskorz et al., 1995 (13)	44.2 (21–65)	2 071	M	1 / 1	34.7	ND	ND	ND	79.7	47.8	25.3	5.6	43.3	31.3	ND / 69.2	ND
De Lena et al., 1995 (14)	ND (15–75)	1 080	M	3 / 1	39.8	35.1	44.9	77.8	53.0	13.0	7.4	ND	ND	ND	ND	ND
Fernández Contreras et al., 1999 (15)	ND (18–79)	1 350	M	3 / 2	24.6	26.0	23.3	ND	59.9	54.2	23.0	ND	ND	ND	ND	ND
Nigro et al., 1999 (16)	ND (15–85)	6 875	M	2 / 1	29.9	27.9	32.3	60–80	54.9	43.0	13.0	ND	ND	ND	ND	ND
Luquez et al., 1999 (17)	ND (20–70)	709	M	ND	29.7	30.8	28.4	70.8	19.1	6.5	ND	6.3	43.3	34.2	ND	ND
Carbajal et al., 2001 (18)	ND (15–75)	1 523	M	3 / 2	35.8	28.5	43.2	82.1	32.0	28.0	4.0	2.0	26.8	27.7	ND / 38.4	ND
De Sereday et al., 2004 (19)	44.5 (20–69)	2 397	ND	2 / 1	36.0	ND	ND	75.5	ND	ND	ND	7.1	30.6	ND	ND	ND
Coghlan et al., 2005 (20)	43.5 (18–90)	522	ND	1 / 1	29.0	27.0	31.3	59.0	ND	ND	ND	ND	ND	ND	ND	ND
Bianchi et al., 2013 (21)	36.1 (14–91)	385	ND	3 / 2	25.2	23.6	28.1	75.9	ND	ND	ND	2.1	ND	ND	49.4 / 33	49.4
Fernández et al., 2007 (22)	ND (28–70)	250	M	2 / 1	26.4	25.2	27.2	64.8	65.2	62.7	13.9	ND	ND	31.0	22.3 / ND	ND
Pedraza et al., 2008 (23)	ND (> 18)	471	ND	3 / 1	43.5	36.0	51.0	66.0	ND	ND	ND	6.0	ND	ND	ND	ND
Redruello et al., 2008 (24)	48.7 (> 18)	522	ND	ND	39.5	ND	ND	ND	ND	61.1	ND	7.7	25.7	27.7	ND / 37.7	ND
Calandrelli et al., 2011 (25)	43.2 (18–88)	601	M	2 / 2	31.6	ND	ND	ND	68.4	72.5	33.6	7.3	36.2	31.7	44.9 / 42.7	44.9
Hernández-Hernández et al., 2010 (26)	44.5 (25–64)	1 482	M	2 / 1	29.0	21.7	37.7	ND	64.0	ND	18.0	ND	ND	ND	ND	ND
Landea et al., 2011 (27)	40.6 (> 15)	1 591	ND	3 / 1	26.1	24.7	27.4	ND	ND	ND	ND	5.1	37.2	28.7	ND	ND
Martinez et al., 2001 (28)	40.4 (18–102)	251	ND	ND	39.8	36.0	44.6	ND	ND	ND	ND	4.0	ND	22.3	ND / 38	ND
De All et al., 2012 (29)	40.4 (> 18)	473	M	2 / 2	32.3	32.9	31.7	67.3	60.8	70.0	ND	5.5	ND	17.5	ND	ND
Marin et al., 2012 (30)	43.7 (> 18)	4 006	A[h]	3 / 1	33.5	25.7	41.7	68.5	62.8	56.2	26.5	4.6	ND	24.3	ND	ND
Farías et al., 2003 (31)	ND (> 18)	452	ND	2 / 1	30.0	32.0	25.0	ND	72.0	80.0	60.0	4.0	ND	25.0	ND	ND

[a] BP: blood pressure.
[b] Meas: measurement(s).
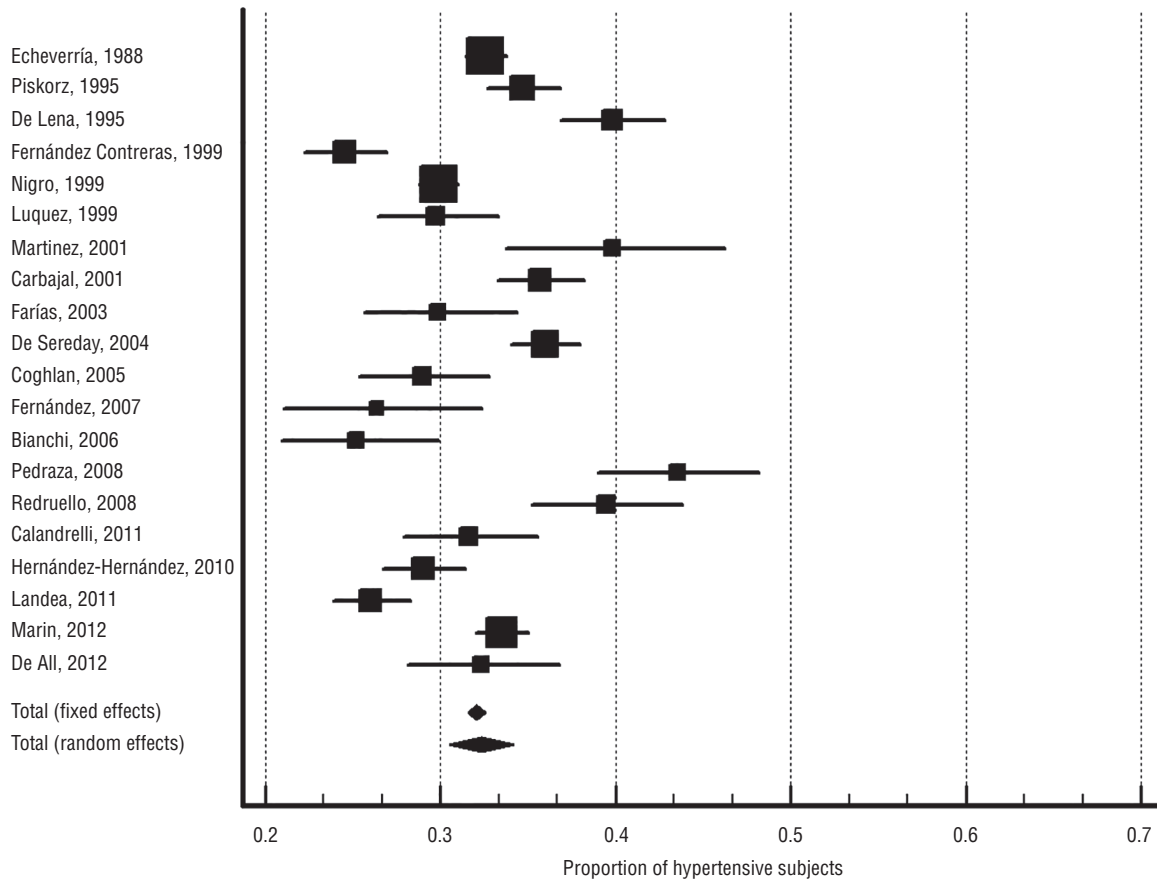[c] BP < 140/90 mmHg (under treatment).
[d] DBT: diabetes.
[e] CO: central obesity (abdominal).
[f] ND: no data found.
[g] M: mercurial.
[h] A: automated.

FIGURE 2. Forest plots of unadjusted prevalence estimates (boxes) with 95% confidence limits (bars) for 20 studies included in systematic review of hypertension research, Argentina, 1988–2013[a]

Proportion of hypertensive subjects

[a] Pooled hypertension prevalence estimates are represented as diamonds.

Crude prevalence of hypertension was calculated by dividing the number of all patients with hypertension in each study by the total number of patients studied in each study. The result is expressed as a percentage (with 95% CIs). Heterogeneity between studies was quantified using the I^2 statistic and tested using Cochran's Q test. Statistical analyses were performed using MedCalc for Windows, version 14.8.1 (MedCalc Software, Ostend, Belgium).

RESULTS

The initial literature search found 306 studies. In the second screening, 267 titles and abstracts were excluded. In the third screening, 39 full-text studies were analyzed and 19 of them excluded (see reasons for exclusion in Figure 1). A final total of 20 peer-reviewed publications reporting hypertension prevalence for a collective total of 33 397 patients (12–31) were reviewed. Number of participants

per study, mean age, prevalence of hypertension (overall and by sex), and other characteristics of the sample are shown in Table 1. The number of participants per study ranged from 250 to 6 875.

Seventeen studies (85%) reported the number of visits and measurements used to determine the BP values. The mercury sphygmomanometer was used to measure BP in 55% of the studies; electronic automated device was used in only one study.

In the majority of studies (60%), two or more BP measurements were collected during a single visit. In five studies (25%), BP was measured in two different visits.
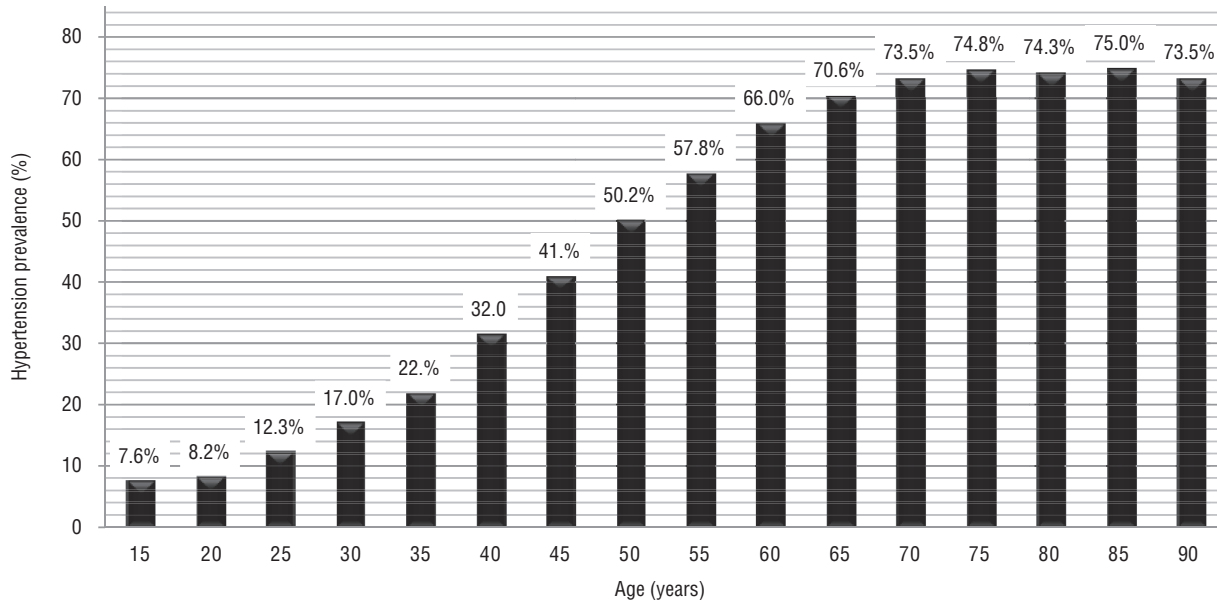
Hypertension prevalence

The crude prevalence of hypertension reported in Argentina was 32.34% (95% CI: 30.0–34.1), with a range of 24.6%–43.5% (Figure 2). Only 11 studies (55%) reported the mean age of the study population. Mean age was 42.7 years (± 8.7) (range:

36.1–48.7 years). Men had a higher prevalence of hypertension than women (34.5% versus 29%; $P = 0.0001$). The estimated total number of people with hypertension in Argentina was approximately 13 069 240. Pooled prevalence of hypertension by age group showed a constant and nonlinear increase with hypertension prevalence of 7.6% in younger people (15–20 years), and exceeding 70% in those > 65 years old (Figure 3).

Older people. Twelve studies (60%) specifically reported the prevalence of hypertension in older patients. The prevalence of hypertension in people ≥ 60 years old was 71% (range: 59.0%–82.1%).

Aboriginal communities. Only two of the 20 studies were conducted in rural aboriginal communities ($n = 986$; mean age 39.8 years). The prevalence of hypertension was lower in aboriginal populations than in other rural communities (27.1% versus 33%; $P = 0.004$).

FIGURE 3. Pooled hypertension prevalence by age group for 20 studies included in systematic review of hypertension research, Argentina, 1988–2013

FIGURE 4. Prevalence, awareness, treatment, and control of hypertension before/after the socioeconomic crisis of 2001, based on 20 studies included in systematic review of hypertension research, Argentina, 1988–2013
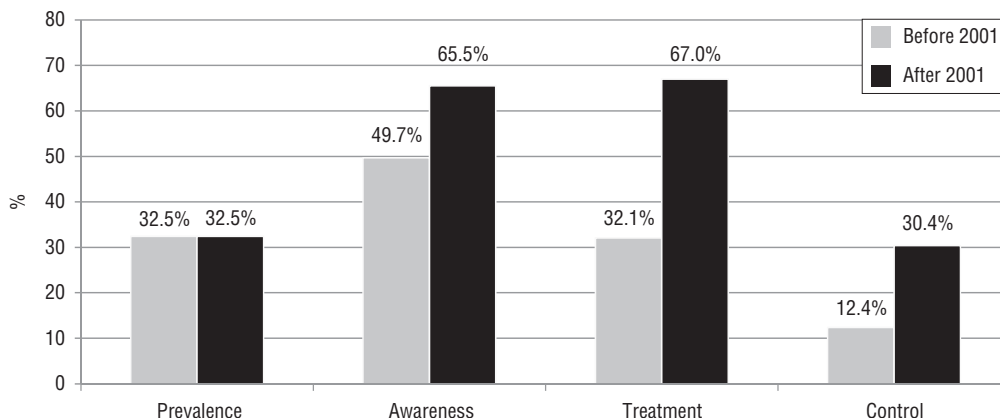
Before/after the socioeconomic crisis of 2001. Studies conducted before and after the socioeconomic crisis of 2001 showed that the prevalence of hypertension pre- and post-crisis was about the same (32.5% versus 32.5% respectively; $P = 0.8$). However, in the post-crisis period, the proportion of hypertension awareness increased from 49.7% to 65.5% ($P = 0.03$); the rate of patients treated pharmacologically increased from 32.1% to 67.0% ($P = 0.0001$); and the rate of BP control increased from 12.4% to 30.4% ($P = 0.0001$) (Figure 4).

Systolic isolated hypertension. The prevalence of isolated systolic hyperten-

sion (reported in only three of the 20 studies) was 26.3% (not shown).

Hypertension awareness, treatment, and control

Only nine studies assessed the level of hypertension treatment, awareness, and control (all three factors). Among hypertensive subjects, only 57.9% (range: 19.1%–79.7%) were aware of their condition. Of those, 49.5% (range: 6.5%–80.0%) were undergoing drug therapy, and of those being treated only 20.5% (range: 1.6%–60.0%) were optimally controlled (defined as BP < 140/90 mmHg).

Other cardiovascular risk factors

Seven studies reported the prevalence of obesity (mean: 35.1%; range: 22.3%–42.7%) and 11 studies (55%) assessed self-report of smoking (mean: 27.4%; range: 17.5%–34.2%). Seven studies (35%) reported the prevalence of dyslipidemia (mean: 34.7%; range: 25.7%–43.3%). Diabetic condition was assessed in 65% of the studies (5.3% prevalence; range: 2.0%–7.7%).

The presence of central (abdominal) obesity was assessed in only two of the 20 studies (47% prevalence; range: 44.9%–49.4%). The prevalence of

overweight was 43.1% (range: 33.0–69.2%) and was reported in six studies.

When studied, both low physical activity and central obesity were prevalent risk factors. Low physical activity was assessed in seven of the 20 studies (54.4% prevalence; range: 25.5%–85.7%) (not shown).

DISCUSSION

Argentina is a heterogeneous country with wide economic, ethnic, and sociocultural diversity. The growing epidemic of high BP and other chronic noncommunicable diseases in association with economic crises represents a real threat to Argentina and other LAC economies (32, 33). The ideal way to determine the exact prevalence of arterial hypertension in Argentina would be to conduct a national survey, with samples representative of the different regions of the country, in which BP was measured during multiple visits. In the absence of this "ideal" type of study, systematic reviews can compile and analyze specific medical evidence in which the units of analysis are the original primary studies. These types of reviews are essential tools in synthesizing the available scientific information, increasing the validity of the conclusions of the primary studies, and identifying areas for future research. The systematic review reported here indicates that more than one-third of Argentina's population had hypertension and confirms that Argentina remains a country of high prevalence of hypertension. To the best of the authors' knowledge, this is the first literature review to date with a meta-analysis of hypertension prevalence, awareness, treatment, and control in Argentina.

Although the study results had inconsistencies and limitations, the results make it clear that overall prevalence is as high or higher than indicated in the previous report (3). In LAC, the reported hypertension prevalence, awareness, treatment, and control for the past 10 years was 25.2%, 63.3%, 44.9%, and 22.1% respectively (3, 34).

The degree of hypertension awareness and control is very low in Argentina; this is a widespread problem shared with other countries classified as "developed" (35). The proportion of the population in Argentina with controlled hypertension is only about 25%—lower than in Brazil but similar to that reported in other LAC

countries—and increasing it will require innovative and effective approaches (36).

LAC countries have the highest level of social inequality of any region of the world. This social inequality is reflected in unequal access to health care. Both the poor and those living in rural areas have less access to health care than other populations, which means they have less opportunity to receive treatment to control the risk factors of chronic diseases (2, 37).

High BP is a frequent cause of drug prescription. Argentina experienced a severe socioeconomic crisis at the end of 2001 that caused a drop in access to drugs, with subsequent risks for public health (5, 6, 38). During 2002, Argentina's retail pharmacy sales of prescription drugs fell by 42%, especially among low-income people. Consequently, the Argentine government implemented a special program to supply free medications to people with scarce resources and lack of medical overage (*Programa Remediar*) (38). Comparing the results of studies performed before and after the 2001 socioeconomic crisis shows that while the prevalence of hypertension remained the same, the rate of hypertension awareness, treatment, and control in the post-crisis period increased 31%, 110%, and 145% respectively.

The prevalence and incidence of cardiovascular diseases are increasing among aboriginal people in Argentina. These trends are similar to those occurring among populations experiencing epidemiological transition in other developing countries throughout the world. As more aboriginal people give up their traditional lifestyles and adopt less healthy urban lifestyles, the prevalence of hypertension and its risk factors will likely increase (39). While the overall prevalence of hypertension is low in young aboriginal people, the prevalence of hypertension in elderly aboriginal people is as high as 68% (20, 21).

This analysis of pooled prevalence of hypertension is an attempt to help fill the gap in national data on hypertension in Argentina. However, the results do not adequately represent aboriginal people or the rural population because the study data are from the most populated areas of Argentina. Therefore, the results reported here are not substitutes for a nationwide prevalence study.

In order to plan cardiovascular prevention strategies for the LAC region as

a whole, better documentation of the prevalence of hypertension and cardiovascular risk factors is needed. In the last 10 years, there has been a trend toward increased health research in LAC. However, the region still accounts for only 4% of health research publications worldwide (versus North America, with 26%, and Europe, with 42%) (37). Insufficient funding and underdeveloped research networks and infrastructure are some of the factors that limit health research and its dissemination in this region (3, 40).

Limitations

This review had some limitations. First, variations across the included studies in 1) age group structure, 2) the methods used for BP measurement and classification, and 3) reporting on BP awareness, treatment, and control limited the ability to make direct comparisons, and did not allow for the adjustment of hypertension prevalence by age. In addition, the prevalence of risk factors associated with hypertension (physical inactivity, diabetes, obesity, etc.) could not be assessed due to methodological differences across the studies in their definitions. Finally, meta-regression was not performed, as this review was designed to report only pooled prevalence. However, heterogeneity of prevalence within each subgroup was clearly high, which the authors attributed to differences in genetic, regional, and environmental factors, as well as differences in smoking, physical activity, and salt intake.

Recommendations

Surveillance or follow-up cohorts should be carried out to confirm the trends of hypertension status found in this review. The studies should be well designed and use standardized methodology to allow for comparison between different regions in Argentina and across different countries in LAC to establish health policies appropriate for each country and region. Future studies should focus specifically on epidemiological research in the Argentine population to help 1) assess the national burden of hypertension; 2) identify potential prevention strategies; and 3) determine barriers to hypertension treatment and effective control, and how they might be reduced.

Conclusions

Despite the relatively limited evidence base, it is clear that 1) hypertension is a major public health problem in Argentina, and 2) the high prevalence of cardiovascular risk factors and low degree of hypertension control represents a short-term threat. The findings from this review suggest considerable under-diagnosis plus insufficient treatment and control. There is an urgent need to develop strategies to prevent, detect, treat, and control hypertension effectively in Argentina.

Conflicts of interest. None.

Disclaimer. Authors hold sole responsibility for the views expressed in the manuscript, which may not necessarily reflect the opinion or policy of the RPSP/PAJPH and/or PAHO.

REFERENCES

1. Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global burden of hypertension: analysis of worldwide data. Lancet. 2005;365(9455): 217–23.
2. Perel P, Casas JP, Ortiz Z, Miranda JJ. Noncommunicable diseases and injuries in Latin America and the Caribbean: time for action. PLoS Med. 2006;3(9):e344.
3. Burroughs Peña MS, Mendes Abdala CV, Silva LC, Ordúñez P. Usefulness for surveillance of hypertension prevalence studies in Latin America and the Caribbean: the past 10 years. Rev Panam Salud Publica. 2012;32(1):15–21.
4. Pan American Health Organization. Health in the Americas: 2012 edition. Regional outlook and country profiles: Argentina. Washington: PAHO; 2012. Available from: http://www.paho.org/saludenlasamericas/index.php?option=com_content&view=article&id=18&Itemid=19&lang=en
5. Gurfinkel EP, Bozovich GE, Dabbous O, Mautner B, Anderson F. Socio economic crisis and mortality. Epidemiological testimony of the financial collapse of Argentina. Thromb J. 2005;13(3):22.
6. Fiszbein A, Giovagnoli PI, Aduriz I. The Argentine crisis and its impact on household welfare. CEPAL Rev. 2003;79:143–58.
7. Belló M, Becerril-Montekio VM. Sistema de salud de Argentina. Salud Publica Mex. 2011;53 Suppl 2:S96–108.
8. Urrútia G, Bonfill X. Declaración PRISMA: una propuesta para mejorar la publicación de revisiones sistemáticas y metaanálisis. Med Clin (Barc). 2010;135(11):507–11.
9. Moher D, Liberati A, Tetzlaff J, Altman DG; PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. PLoS Med. 2009;6(7):e1000097. doi:10.1371/journal.pmed.1000097. Epub 2009 Jul 21.
10. Vandenbroucke JP, von Elm E, Altman DG, Gøtzsche PC, Mulrow CD, Pocock SJ, et al. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE): explanation and elaboration. PLoS Med. 2007;4(10):e297.
11. Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL Jr, et al. Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. Hypertension. 2003;42(6):1206–52. Epub 2003 Dec 1.
12. Echeverría RF, Camacho RO, Carbajal HA, Salazar MR, Mileo HN, Riondet B, et al. Prevalencia de la hipertensión arterial en La Plata. Medicina (B Aires). 1988; 48(1):22–8.
13. Piskorz D, Locatelli H, Toni C, Gidekei L, Girino C, Raul G. Hipertensión arterial, colesterol plasmático y tabaquismo: un estudio epidemiológico en la ciudad de Rosario. Rev Argent Cardiol. 1995;63(1): 25–36.
14. De Lena SM, Cingolani HE, Almirón MA, Echeverría RF. Prevalencia de la hipertensión arterial en una población rural bonaerense. Medicina (B Aires). 1995;55(3): 225–30.
15. Fernández Contreras R, Gómez Llambí H, Terragno N. Prevalencia, control y tratamiento de la hipertensión arterial. Rev Argent Cardiol. 1999;67(6):788.
16. Nigro D, Vergottini JC, Kuschnir E, Bendersky M, Campo I, De Roiter HG, et al. Epidemiologia de la hipertensión arterial en la ciudad de Cordoba, Argentina. Rev Fed Arg Cardiol. 1999;28:69–75.
17. Luquez H, Madoery RJ, De Loredo L, De Roiter H, Lombardelli S, Capra R, et al. Prevalencia de hipertension arterial y factores de riesgo asociados. Estudio Dean Funes (Provincia de Cordoba, Argentina). Rev Fed Arg Cardiol. 1999;28: 93–104.
18. Carbajal HA, Salazar M, Riondet B. Variables asociadas a la hipertensión arterial en una región de la Argentina. Medicina (B Aires). 2001;61:801–9.
19. De Sereday MS, Gonzalez C, Giorgini D, De Loredo L, Braguinsky J, Cobeñas C, et al. Prevalence of diabetes, obesity, hypertension and hyperlipidemia in the central area of Argentina. Diabetes Metab. 2004;30(4):335–9.
20. Coghlan E, Quero LB, Schwab M, Pellegrini D, Trimarchi H. Prevalencia de hipertensión arterial en una comunidad aborigen del norte argentino. Medicina (B Aires). 2005;65(2):108–12.
21. Bianchi ME, Cusumano AM, Velasco GA. Cardiovascular risk factors and proteinuria in Toba aborigines from Chaco, Argentina. Kidney Int Suppl. 2013;3(2): 206–9.
22. Fernández VH, Beligoy ME, Giménez JC, Parodi BP, Higashigata MN, Almirón M. Prevalencia de Hipertensión Arterial en Santo Tomé, Corrientes, Argentina. Rev Med Nord. 2007;9:1–7.
23. Pedraza A, Camino Willhuber G, Chaile I. Prevalence and associated risk factors of arterial hypertension in Sobremonte and Ojo de Agua Departments in Cordoba State. Rev Fac Cien Med Univ Nac Cordoba. 2008;65(3):87–94.
24. Redruello MF, Calderón G, Masoli O, Mulassi A, Agüero R, La Bruna MC, et al. Prevalencia de factores de riesgo y riesgo cardiovascular global en la población de Tres Lomas. Rev Argent Cardiol. 2008; 76(6):450–8.
25. Calandrelli M, Saavedra ME, Trevisán M, Zgaib ME, Parola M, Ferrante D. Relevamiento de factores de riesgo cardiovascular en Bariloche. Rev Argent Cardiol. 2011;79(4):344–50.
26. Hernández-Hernández R, Silva H, Velasco M, Pellegrini F, Macchia A, Escobedo J, et al. Hypertension in seven Latin American cities: the Cardiovascular Risk Factor Multiple Evaluation in Latin America (CARMELA) study. J Hypertens. 2010; 28(1):24–34.
27. Landea MR, Salazar MR, Marillet AG, Novello MA, Carbajal HA, Echeverría RF. Prevalencia de tabaquismo y factores de riesgo cardiovascular en el casco urbano de una localidad rural de la Provincia de Buenos Aires. RAMR. 2011; 11(3): 110–6.
28. Martinez CA, Ibañez J, Gerometta PH, Delssin B, De Pedro P, Damonte L, et al. Factores de riesgo cardiovascular en una comunidad suburbana de la provincia de Corrientes. Rev Cien y Tec. 2001; 3:1-3. Available from: http://www.unne.edu.ar/unnevieja/Web/cyt/cyt/2001/3-Medicas/M-025.pdf
29. De All J, Lanfranconi M, Bledel I, Doval H, Hughes A, Laroti A, et al. Prevalencia de la hipertensión arterial en poblaciones rurales del norte argentino. Hipertens Riesgo Vasc. 2012; 29(2):31–5.
30. Marin MJ, Fábregues G, Rodríguez PD, Díaz M, Paez O, Alfie J, et al. Registro Nacional de Hipertensión Arterial. Conocimiento, tratamiento y control de la hipertensión arterial. Estudio RENATA. Rev Argent Cardiol. 2012;80(2):121–9.
31. Farías EF, Camacho SG, Fernandez EG, De Cerchio AE, Lugo C, Rott L, et al. Encuesta de situación de hipertensión arterial en el área del Caps Coni. Rev Enferm Hosp Ital. 2003;6(18):11–5.
32. Rubinstein A, Alcocer L, Chagas A. High blood pressure in Latin America: a call to action. Ther Adv Cardiovasc Dis. 2009; 3(4):259–85.
33. Rubinstein A, Colantonio L, Bardach A, Caporale J, García Martí S, Kopitowski K, et al. Estimación de la carga de las enfermedades cardiovasculares atribuible a factores de riesgo modificables en Argentina. Rev Panam Salud Publica. 2010;27(4): 237–45.

34. Díaz AA, Tringler MF. Prevalence of hypertension in rural populations from Ibero-America and the Caribbean. Rural Remote Health. 2014;14:2591. Epub 2014 Jan 25.

35. Pereira M, Lunet N, Azevedo A, Barros H. Differences in prevalence, awareness, treatment and control of hypertension between developing and developed countries. J Hypertens. 2009;27(5):963–75.

36. Picon RV, Fuchs FD, Moreira LB, Riegel G, Fuchs SG. Trends in prevalence of hypertension in Brazil: a systematic review with meta-analysis. PLoS One. 2012; 7(10):e48255. doi:10.1371/journal.pone.0048255. Epub 2012 Oct 31.

37. Almeida-Filho N, Kawachi I, Filho AP, Dachs JN. Research on health inequalities in Latin America and the Caribbean: bibliometric analysis (1971–2000) and descriptive content analysis (1971–1995). Am J Public Health. 2003;93(12): 2037–43.

38. Bernztein RG, Drake I. Uso de medicamentos en hipertensión arterial en el primer nivel de atención pública argentina. La experiencia del Programa Remediar. Rev Argent Cardiol. 2009;77(3):187–95.

39. Yusuf S, Reddy S, Ounpuu S, Anand S. Global burden of cardiovascular diseases: part II: variations in cardiovascular disease by specific ethnic groups and geographic regions and prevention strategies. Circulation. 2001;104(23): 2855–64.

40. Jahangir E, Comandé D, Rubinstein A. Cardiovascular disease research in Latin America: a comparative bibliometric analysis. World J Cardiol. 2011;3(12):383–7.

RESUMEN

Tendencias en la prevalencia de la hipertensión en Argentina en los 25 últimos años: una revisión sistemática de estudios de observación

Objetivo. Calcular la prevalencia global de la hipertensión en Argentina y analizar las tendencias en el nivel de conciencia sobre la hipertensión, el tratamiento y el control durante el período de 1988 al 2013.

Métodos. Se llevó a cabo una búsqueda bibliográfica en las bases de datos MEDLINE, SciELO y LILACS de estudios sobre prevalencia de la hipertensión realizados desde 1988 al 2013. Los criterios de selección para la inclusión fueron los siguientes: 1) estudios y encuestas transversales basados en la población, con mediciones de la presión arterial, en los que se notificara la prevalencia de hipertensión (o datos para calcularla); 2) estudios basados en la población realizados en adultos de Argentina (personas ≥ 18 años de edad); y 3) estudios en que la hipertensión se definiera como una presión arterial sistólica promedio ≥ 140 mmHg o una presión arterial diastólica promedio ≥ 90 mmHg, o como el empleo de medicamentos antihipertensivos.

Resultados. Se seleccionaron 20 publicaciones arbitradas que notificaban la prevalencia de la hipertensión en un total de 33 397 pacientes. La prevalencia bruta de hipertensión notificada en Argentina fue de 32,34% (IC de 95%: 30,0-34,1). La prevalencia de hipertensión en personas ≥ 65 años de edad fue ≥ 71%. Solo nueve estudios evaluaron el nivel de conciencia sobre la hipertensión, el tratamiento y el control (57,9, 49,5 y 20,5%, respectivamente). Los factores de riesgo de enfermedad cardiovascular más prevalentes fueron el sedentarismo (54,4%), la obesidad central (abdominal) (47%), el sobrepeso (43,1%), la dislipidemia (34,7%), el tabaquismo (27,4%) y la diabetes (5,3%).

Conclusiones. La hipertensión es un problema importante de salud pública en Argentina. Existen datos probatorios de un considerable subdiagnóstico, y de un tratamiento y control insuficientes. Existe una necesidad urgente de elaborar estrategias para prevenir, detectar, tratar y controlar eficazmente la hipertensión en todo el país.

Palabras clave   Epidemiología; hipertensión; vigilancia epidemiológica; Argentina.