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May Measurement Month 2018: an analysis of blood pressure screening results from Argentinean cohort

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Hypertension continues to be the leading cause of death and disability in the industrialized world, with a high level of unawareness and unacceptably poor control. Therefore, the Argentinian Society of Hypertension, in agreement with the May Measurement Month (MMM) initiative of the International Society of Hypertension, implemented for the second consecutive year an educational campaign during the month of May 2018. A volunteer cross-sectional survey was carried out in public spaces and health centres during the month of May 2018 across 33 cities in Argentina. Hypertension was defined as systolic blood pressure (BP) $\geq$140 mmHg or diastolic BP $\geq$90 mmHg based on the mean of the 2nd and 3rd of three consecutive BP measurements, or in those on treatment for high BP. Statistical analysis including multiple imputation followed the MMM protocol. A total of 70 418 individuals were screened during MMM18, after excluding those under 18 years old. Of the total, 43.8% of participants were classified as hypertensive, 77.7% were aware of their diagnosis, 69.1% were on pharmacological treatment, and 38.7% were controlled. Of those on antihypertensive medication, 56.0% were controlled. It is necessary to reinforce strategies not only to increase the awareness and control of hypertension but also to identify the population groups, in which these strategies would have the greatest impact, helping to reduce the enormous health burden attributed to hypertension.

Introduction

Hypertension represents the leading cause of death and disability in the industrialized world,[1] even though its pharmacological treatment has been repeatedly proven to effectively reduce morbidity and mortality.[2,3]

Argentina, with a population of more than 40 million people, does not escape from this problem, with ~40% of the global mortality attributable to cardiovascular diseases.[4] The prevalence of hypertension in our country is approximately 33–36%[5] and making things even worse is that this main risk factor for morbidity and mortality has a high level of unawareness and very low degree of control among the population.[6,7] With this background, the Argentinian Society of Hypertension (SAHA) has, among its main objectives, the design and establishment of different strategies intended to improve the degree of knowledge and control

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of hypertension in our country. In the last screening campaign performed in Argentina during May 2017,[8] it was detected that 6 out of 10 hypertensive patients were either not on treatment or did not reach the blood pressure (BP) goal values.

Thus, we believe that educational campaigns will be a useful tool to increase the knowledge and awareness of this highly prevalent cardiovascular problem, hopefully leading to a reduction in the enormous health burden attributed to high BP. In 2018, during the month of May and similar to the previous year, SAHA actively participated in a synchronized and standardized multinational screening campaign of hypertension proposed by the International Society for Hypertension and endorsed by the World Hypertension League named 'May Measurement Month' (MMM18).[9] The Argentinian programme was dubbed: 'Know and control your blood pressure'.

Methods

SAHA invited all its associates to participate in the multinational campaign to measure BP in the general population. All of the individuals screened agreed to participate of their own free will.

The campaign, co-ordinated by 60 SAHA members, was mainly conducted at hospitals and health centres, although some public spaces and pharmacies were also included. It took place in 33 cities in Argentina, representing 15 out of the 23 country states. At the participating centres, artworks and banners announced the campaign and brochures were supplied to the public.

Screened volunteers were asked a few questions to gather additional data and their BP was measured two, or ideally three times, with 1-min intervals between readings, on the left arm (preferably) in a seated position. Omron and Microlife validated automatic devices were used. This information was entered via Google form or, alternatively, manually on a spread sheet.

Multiple imputation based on the global data[9] was used to impute the mean of the 2nd and 3rd BP readings. Blood pressure was calculated as the mean of the 2nd and 3rd readings, and hypertension was defined as systolic BP $\geq$140 mmHg or diastolic BP $\geq$90 mmHg or in those on treatment for high BP. Among those treated, controlled BP was defined with values of $<$140/90 mmHg. Weight and height were self-reported and body mass index (BMI) was calculated. Those participants classified as hypertensive were provided with visual material detailing dietary and lifestyle advice to lower their BP.

Continuous variables (age, BMI, systolic BP, and diastolic BP) were expressed as mean $\pm$ standard deviation. Data were analysed centrally using Stata and *P*-values $<$0.05 (two-tailed) were considered statistically significant.

Results

A total of 70 418 individuals had their BP measured during the month of May 2018 in the context of the MMM initiative by the Argentinian 'Know and control your blood pressure' local campaign. Of those screened, mean age was 54.6 $\pm$ 17.8 years, mean BMI was 28.1 $\pm$ 5.3 kg/m^2, 58% were women, and 30.3% were currently on antihypertensive medication.

The prevalence of hypertension was 43.8%. Of those with hypertension, 77.7% were aware, 69.1% were on medication, and 38.7% were controlled. Of those on medication, 56.0% were controlled. Furthermore, 19.4% of those not on any antihypertensive medication were found with raised BP.

Based on linear regression models, adjusted for age and sex (with an interaction) and antihypertensive medication, overweight, and obese participants were associated with higher systolic and diastolic BPs compared to participants with healthy weights. Conversely, underweight vs. healthy weight participants were associated with lower systolic and diastolic BPs (Supplementary material online, *Figure S1*).

Discussion

The screening campaign performed in Argentina with the slogan 'Know and control your blood pressure' as part of the international MMM18, doubled the number of people surveyed compared with the previous year. Among the most relevant results of the 2018 edition is the persistence of a high proportion of hypertensive individuals. The overall prevalence of hypertension (43.8%) was lower than that found in MMM17 (50.4%) and other studies in our country.[8,10]

The level of awareness among individuals with hypertension is high (77.7%). However, the level of control of BP amongst those on medication, was poor and insufficient, with almost half uncontrolled, similar at previous edition of this same campaign. Therefore, it is clear that we have not improved in this persisting as a critical health problem in our country.

Thus, the low level of control of hypertension generates the critical need for the development of community-based prevention strategies (primary prevention). Interestingly, in a previous population-based study in our country, it was found that the 'healthier' individuals (lower BP values and rates of adiposity at time of the study) develop to greater weight gain and increases in BP which doubled the risk of cardiovascular diseases 10 years after the onset of a health programme.[11]

Therefore, campaigns such as MMM18 not only emerge as necessary strategies to increase the awareness on this highly prevalent cardiovascular disease but also to identify the population groups in which these strategies would have the greatest impact, helping to reduce the enormous health burden attributed to hypertension.

Supplementary material

Supplementary material is available at *European Heart Journal Supplements* online.

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