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May Measurement Month 2021: an analysis of blood pressure screening results from Argentina

Jessica Barochiner[1]*, Fortunato García Vázquez[1], Pedro Becerra[1], Cristina Rojas[1], Ricardo Pesenti[2], Noemi A. Mazzei[3], Arnoldo Kalbermatter[1], Analía Fuentes[1], Mariana Fita[1], Diego Márquez[1], Mauro Ruise[1], Thomas Beaney[4,5], Carolina Janssen-Telders[4,6], Neil R. Poulter[4], and Marcos J. Marín[1]

[1]Sociedad Argentina de Hipertensión Arterial, Tte. Gral. Juan Domingo Perón 1479, Piso 2 '4', Buenos Aires C1037ACA, Argentina; [2]Confederación Farmacéutica Argentina (COFA), Av. Julio A. Roca 751, Piso 2, Buenos Aires C1067ABC, Argentina; [3]Universidad Maimónides (UMAI), Hidalgo 775, Buenos Aires CP 1405, Argentina; [4]Imperial Clinical Trials Unit, Imperial College London, Stadium House, 68 Wood Lane, London W12 7RH, UK; [5]Department of Primary Care and Public Health, Imperial College London, St Dunstan's Road, London W6 8RP, UK; and [6]Department of Cardiology, Amsterdam UMC location Vrije Universiteit Amsterdam, De Boelenlaan 1117, Amsterdam, The Netherlands

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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 rates. Therefore, the Argentinian Society of Hypertension, in association with the May Measurement Month (MMM) charity, implemented an awareness campaign during May 2021. A voluntary cross-sectional survey was carried out during the month of May 2021 in public spaces and health centres across 29 cities in Argentina. Hypertension was defined as systolic blood pressure (BP) $\geq$ 140 mmHg and/or diastolic BP $\geq$ 90 mmHg based on the mean of the second and third of three BP measurements or in those volunteers on treatment for high BP. Statistical analysis including multiple imputation followed the MMM protocol. A total of 26 070 individuals (average age 53.4 years, 14 816 women and 11 254 men) were evaluated. The age- and sex-standardized mean BP was 125.1/77.6 mmHg. Of all participants, 54.4% had hypertension. Although 79.8% of the hypertensive participants were aware of their condition and 76.9% were on antihypertensive treatment, only 42.5% of all individuals with hypertension had their BP controlled (<140/90 mmHg). Of those on antihypertensive medication, 55.3% were controlled. The low level of hypertension control highlights the critical need for community-based prevention strategies to increase the awareness and control of hypertension, thereby reducing the enormous health burden attributed to this condition.

Introduction

Hypertension is the leading cause of death and disability in developed countries, despite the availability of effective treatments.[1,2] In Argentina, with a population of ~45 million people, 376 219 deaths were registered in 2020, 25.8% of them being attributable to cardiovascular diseases.[3] The prevalence of hypertension in Argentina is approximately 33–36%.[4,5] A matter of concern is that this main risk factor for morbidity and mortality has a low level of awareness and a very low degree of control

*Corresponding author. Tel: 54 011 4371 3019, Fax: 54 011 4600 4651, Email: jessica.barochiner@hospitalitaliano.org.ar

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amongst the population.[4] As a consequence, the Argentinian Society of Hypertension (SAHA) has, amongst its main objectives, the design and establishment of different strategies intended to improve the level of knowledge and control of hypertension.

In 2017, the International Hypertension Society, endorsed by the World Hypertension League, initiated May Measurement Month (MMM), the largest synchronized multinational screening campaign for standardized blood pressure (BP) measurement. The SAHA has been participating in this campaign ever since with the slogan: 'Know and control your blood pressure'. In the screening campaigns performed in Argentina during 2017 (MMM17),[6] 2018 (MMM18),[7] 2019 (MMM19),[8] and 2020 (MMM20, unpublished data), around 6 out of 10 hypertensive patients were either not on treatment or did not reach recommended BP targets. The year 2020 was noteworthy with the emergence of COVID-19, requiring social distancing, isolation, and other restrictions. Therefore, MMM20 was conducted in a completely virtual way, inviting families who owned an automatic BP monitor to measure BP at home. In this campaign, there were fewer participants, and the prevalence of treated and controlled hypertensives was slightly higher than in previous ones (unpublished data). In 2021, the MMM21 campaign was again performed during the month of May and similarly to previous years; the main results are presented in this manuscript.

Methods

Due to the continuing COVID-19 pandemic, MMM21 was undertaken in both virtually and face to face. The SAHA invited all its associates to participate in the multinational campaign to measure BP in the general population, and it also invited volunteers who owned an automatic BP monitor to participate virtually through its home page. All of the individuals screened provided informed consent to participate. The campaign, coordinated by 31 SAHA members, Confederación Farmacéutica Argentina, and Universidad Maimónides, was mainly conducted at hospitals and health centres, although some public spaces and pharmacies were also included. The screening took place in 29 cities in Argentina. At the participating centres, artworks and banners announced the campaign, and brochures were supplied to the public. Screened volunteers were asked to complete a short questionnaire to gather additional data and their BP was measured twice (in contrast to other MMM campaigns where three readings were taken) with 1-min intervals between readings, on the left arm (preferably) in a seated position. Omron HEM 7120 and Microlife BP A200 validated automatic devices were used; cuff sizes used varied according to arm circumference. This information was entered via a Google form or, alternatively, manually on a spreadsheet. Multiple imputation was used to impute the mean of the second and third BP readings to provide comparable readings with other MMM studies, based on the global data, as described previously.[9] Hypertension was defined as systolic BP $\geq$ 140 mmHg and/or diastolic BP $\geq$ 90 mmHg based on the mean of the second and third BP readings and/or in those volunteers on treatment for high BP. Amongst those treated, controlled BP was defined as values of <140 systolic and <90 mmHg diastolic. Those participants classified as hypertensive were provided with visual material detailing dietary and lifestyle advice to lower their BP. Continuous variables (age, systolic BP, and diastolic BP) were expressed as mean $\pm$ standard deviation. Proportions were expressed as per cent (%). Data were analysed centrally by the MMM project team, including multiple imputation.

Results

A total of individuals (53.4 years old), 14 816 (56.8%) women and 11 254 men (43.2%), were included in the present analysis. Data from virtual and face-to-face measurements are combined. After multiple imputation, the mean BP standardized for age and gender was 125.1/77.6 mmHg.

As displayed in *Table 1*, 14,169 individuals (54.4%) had hypertension. The prevalence in females was 50.9%, whereas the prevalence in males was 58.9%. Although 79.8% of the hypertensive participants were aware of their condition and 76.9% were on antihypertensive treatment, only 55.3% of those on treatment were controlled. Only 42.5% of all individuals with hypertension had their BP controlled to <140/90 mmHg. In addition, 21.6% of those not on any antihypertensive medication were found with raised BP.

The proportions of those with hypertension, awareness, and treatment all rose with increasing age strata whilst control rates tended to fall with age.

Table 1 Age stratified and total participants: proportions with hypertension, awareness, on medication and with controlled blood pressure

Total participants	Number (%) with hypertension	Number (%) of hypertensives aware	Number (%) of hypertensives on medication	Number (%) of those on medication with controlled BP	Number (%) of all hypertensives with controlled BP
26 070 (all ages)	14 169 (54.4%)	11 309 (79.8%)	10 896 (76.9%)	6026 (55.3%)	6022 (42.5%)
Age Strata (in years)					
18-29	11.6	38.4	33.3	71.9	
30-39	22.8	53.3	47.8	63.1	
40-49	42.8	66.8	61.6	54.5	
50-59	61.0	77.9	74.3	57.2	
60-69	75.2	85.9	83.9	55.2	
≥70	81.2	89.3	87.7	53.2	

Discussion

In the MMM21 campaign, we found a rate of hypertension of 54.4%, with 79.8% of hypertensives aware of their status, and 55.3% of hypertensives on medication being controlled. These figures are consistent with previous campaigns, except for MMM20, where the level of treatment and adequate control was slightly higher than in 2021 with 45.6% (unpublished data) vs. 42.5%. This is possibly a consequence of the way subjects were recruited during 2020—given the strict isolation due to COVID-19, only families that owned a home BP monitor participated that year. The possibility to assess BP at home might be related to better control. Due to the impact of COVID-19, the recruitment rate was much lower compared with other years (for example, 94 523 recruited individuals in 2019 vs. 26 070 in 2021).

The prevalence of hypertension found in our MMM campaigns is higher than that previously reported in epidemiological studies in our country, namely around 33–36%.[3,4] This could be explained by the fact that recruitment was opportunistic, being mainly conducted in hospitals and health centres and so is not nationally representative.

As a limitation, and in contrast to the usual MMM protocol, only two BP measurements from participants were taken instead of three. However, by using multiple imputation, based upon global data, the mean of the second and third readings could be estimated, to remain consistent with other studies. Other limitations are that participants were not randomly sampled and that, for some variables, such as the use of antihypertensive medication, there were some missing data.

The level of control of BP amongst those on medication was insufficient, with approximately half uncontrolled, similar to previous editions of this same campaign. This suggests that we have not made any improvement in this critical health problem in our country. Campaigns such as MMM are necessary to provide an opportunity to raise awareness and to develop community-based prevention strategies.

In conclusion, periodic campaigns such as MMM emerge as necessary strategies to increase the awareness of this highly prevalent condition, helping to reduce the enormous health burden attributed to hypertension.

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Data availability

Data available on request.

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