

May Measurement Month 2018: an analysis of blood pressure screening in the Philippines

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KEYWORDS

Hypertension screening;
Philippines hypertension;
Opportunistic screening;
Blood pressure

Building on the gains of May Measurement Month 2017 (MMM17), the Philippine Society of Hypertension once again took part in MMM18 to raise awareness of high blood pressure (BP) in the country and to harness opportunistic BP screening in detecting unaware hypertensive individuals and referring them for treatment. We followed the standard MMM18 protocol designed by the International Society of Hypertension, utilizing convenience sampling with volunteer investigators, taking three sitting BP measurements of volunteer adults (≥ 18 years). Basic data on demographic, lifestyle, and environmental factors were also taken. We analysed 177 176 screened individuals from the Philippines. Of these, 29.1% (51 527) had also participated in MMM17, whereas 68.8% (121 893) were new screenees; and 14.2% (25 232) had their BP taken for the first time ever. After multiple imputation, 39.0% (69 126)

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were hypertensive. Of these, 50.3% (34 795) were aware they were hypertensive. 49.9% (34 491) were on antihypertensive medication, 58.0% (20 010) of whom had controlled BP <140/90 mmHg. Only 28.9% of all participants with hypertension had controlled BP. Systolic BPs and diastolic BPs were significantly higher in the overweight and obese, in those receiving antihypertensive medications, in patients with diabetes, and significantly lower in pregnant women. MMM18 has again shown that opportunistic BP screening, harnessing volunteers, is a pragmatic public health measure to improve awareness and treatment rates of raised BP.

Introduction

For more than four decades now, cardiovascular diseases (CVDs) and stroke remain the leading causes of mortality in the Philippines.¹ Hypertension (HTN) is a major risk factor for CVDs and stroke and has been implicated as the cause for the deaths of tens of thousands of Filipinos yearly.²

Despite all efforts of governmental agencies (GAs) and non-governmental organizations (NGOs) to improve awareness, treatment, and control rates of HTN in the country, its prevalence has still been increasing, as shown in the national health surveys.^{2,3} The May Measurement Month screening in 2017 (MMM17) has shown that there was still a disconcerting number of unaware hypertensives, and more than half of those receiving treatment still had uncontrolled blood pressure (BP).⁴ With the lack of regular, organized screening programmes, opportunistic BP screening may play an important role to diagnose unaware hypertensives and those already on treatment but with inadequately controlled BP.

The Philippine Society of Hypertension (PSH) once again led an alliance of various GAs and NGOs to participate in MMM18, as part of a worldwide, month-long awareness and screening campaign initiated by the International Society of Hypertension (ISH) to raise awareness on raised BP, and highlight the gap in screening programmes.

Methods

For MMM18, more than 300 volunteer investigators from various parts of the country followed the standard MMM18 protocol designed by the International Society of Hypertension (ISH). The local volunteer investigators utilized convenience sampling, taking three sitting BP measurements of volunteer adults (≥ 18 years). Basic data on demographic, lifestyle, and environmental factors were also taken. Ethical clearance was secured for this nationwide BP screening. The volunteer investigators organized more than 300 sites nationwide—in rural health clinics of the Department of Health (DOH), government and private hospitals, pharmacies, schools, and clinics of individual doctor volunteers. As in MMM17, training for the volunteers was done via video recordings, but whenever feasible, face-to-face training was conducted.

Omron BP digital devices were provided at all sites, although a few sites used other types of digital device or an aneroid sphygmomanometer. For data recording, the majority recorded them manually on paper forms, and these were subsequently transferred by 15 trained encoders supervised by the PSH secretariat on excel spreadsheets and transmitted to ISH. Only a small number used the MMM App for MMM18 as the volunteer investigators explained that using the App took more time than manual recording. Hypertension was defined as a systolic BP ≥ 140 mmHg or diastolic BP ≥ 90 mmHg, or taking antihypertensive medication. The PSH also performed quality screening of the data, but most of the data ‘cleaning’ and analysis were done centrally by the MMM statistical team. In the analysis, multiple imputations were done to impute the mean of readings 2 and 3 where these were missing.⁵

Results

The volunteer investigators in the Philippines contributed 177 176 screened individuals to the global pool. Participants were 65.6% (116 221) female, had a mean age of 47.9 ± 16.7 years and a mean body mass index of 23.6 ± 4.4 kg/m². 29.1% (51 527) had already participated in MMM17 and 14.2% (25 232) had their BP taken for the first time ever. There were 4.6% (8191) diabetic patients, 1.3% (2236) reported having a previous myocardial infarction, and 1.2% (2201) reported having a previous stroke (see [Supplementary material online, Table S1](#): Demographics and clinical risk factor profile of participants).

After multiple imputation, 39.0% (69 126) were hypertensive. Of this number, 50.3% (34 795) were aware they were hypertensive. Almost half, or 49.9% (34 491) were on antihypertensive medication, 58.0% (20 010) of whom had controlled BP <140/90 mmHg. Of the total number of hypertensive individuals, 28.9% had controlled BP. Of those not on antihypertensive medication, 24.3% (34 635) were found to have raised BP. Based on linear regression models, SBPs and DBPs were significantly higher in the overweight and obese (*Figure 1A*), and in those receiving antihypertensive medications (*Figure 1B*); and significantly lower in pregnant women. A slightly lower SBP and a slightly higher DBP was also noted in those taking 1 or more drinks of alcohol per week (vs. those who never/rarely drink alcohol). The BP appeared to vary depending on the day of the week it was taken (see [Supplementary material online, Figure S2A, B](#)).

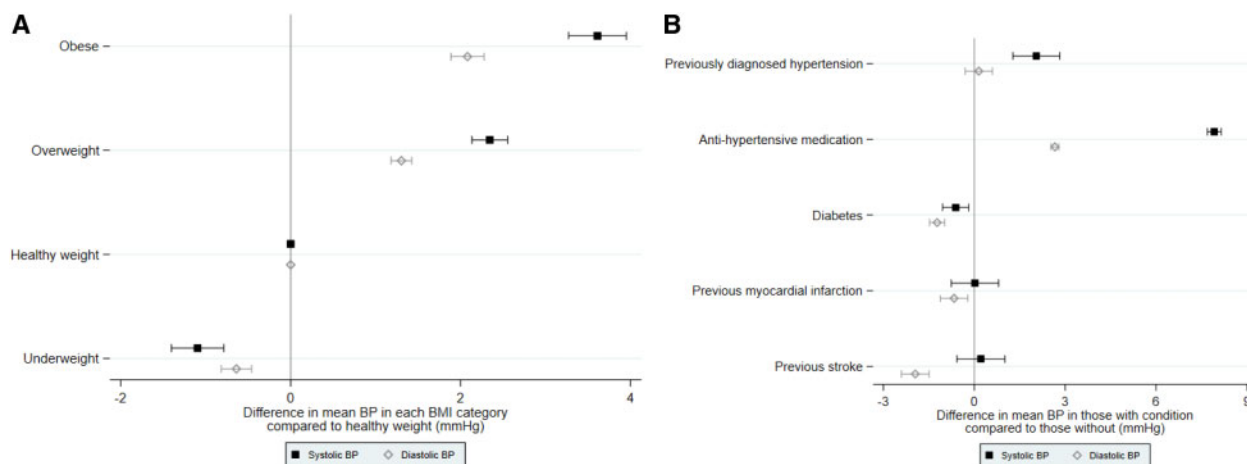


Figure 1 (A) Differences in mean blood pressure according to body mass index, with health weight as the reference category. (B) Differences in mean blood pressure in those with each condition, compared with those without. Both adjusted for age, gender, and antihypertensive medication use.

Discussion

Although opportunistic BP screening, such as performed in MMM, has its biases and limitations thereby not necessarily representing the national situation, it nonetheless offers important insights into awareness of HTN in the country and identifies some gaps that need to be addressed. In MMM18, 14.2% (25 232) of the adult participants had their BP taken for the first time ever. This highlights the need for regular BP screening programmes. Opportunistic BP screening such as the MMM campaign can also help fill in the gap, particularly in countries where there are no regular, organized screening programmes.

It is quite interesting that the findings in this survey still closely follow the traditional rule of halves in HTN. After multiple imputations, 39.0% were hypertensive. Of this number, 50.3% were aware they were hypertensive. Almost half or 49.9% were on antihypertensive medication, 58% of whom had controlled BP <140/90 mmHg. Of the total number of hypertensive individuals, 28.9% had controlled BP. It is a challenge for local government health officials and healthcare professionals to improve awareness, treatment, and control rates. More than 7 out of 10 hypertensive Filipinos still have uncontrolled HTN, despite the availability of effective medications to control it. Long-term adherence has also been noted as a major problem that has to be addressed in the management of chronic medical conditions in the Philippines,^{2,3} as it is worldwide.

Although the data are quite limited, MMM18 also takes a glimpse on the association of BP on demographic, lifestyle, and environmental factors. There appears to be a very minimal elevation of DBP in smokers and regular alcohol drinkers (once or more per week), and an equally minimal elevation of SBP in those who regularly have 1 to 3 drinks a month. Nonetheless, a healthy lifestyle with cessation of smoking and moderation of drinking alcohol should remain an important goal in counselling the general population, especially hypertensive individuals.

Conclusions and implications

MMM18 reinforces the importance of interim screening programmes particularly in low- to middle-income countries where there is a general lack of a permanent screening and monitoring system.

With the dedicated efforts of volunteers, the entire campaign entails relatively minimal cost and can be considered a most cost-effective strategy in helping increase awareness, which should lead to better treatment and control rates.

The limited demographic data obtained in MMM18 may also provide medical practitioners and health officials a better understanding of the profile of their hypertensive population, and some nuances in managing their HTN.

Supplementary material

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

Acknowledgements

We acknowledge and thank the following for their invaluable assistance in MMM18: Former Health Secretary Paulyn Russell-Ubial, Dr Enrique Tayag and all the participating government physicians nationwide under the Department of Health, Dr Lourdes Manese and Dr Regina Bartolome of the Manila Health Department, Dr Beverly de Guzman of the Philippine National Police, Dr Ma. Corazon Dumlao of the Department of Education, Dr Victoria Poquiz of the Social Security System, Dr Esperanza Cabral, Dr Romeo Divinagracia, Dr Abdias Aquino, Dr Nelson Abelardo, Dr Petrarch Bravo, Dr John Anonuevo, Dr Eugene Reyes, Dr Noemi Pestano, Dr Gina Ogaco, Dr Joel Abanilla, Dr Agnes del Rosario, Dr Graciela Garayblas-Monzon, Dr Arnold Mina, Dr Vinny Mina, Dr Doris Mendoza, Dr Bibly Macaya, Dr Gina

Nazareth, Dr Raul Lapitan, Dr Nannette Rey, Dr Jorge Sison, Dr Veronique Morris, Dr Alain Belly, Raymond Gerald Abu, Aileen Manalang, Andrew Michael Go, Vanessa Ingrid Aguisanda, Servier Philippines staff, Dr Rosario Sevilla, Flobert Leonard Barrera, Geraldine Perez, Richard Madlangbayan, PSH South Luzon Chapter, Adventist University of the Philippines, Manila Doctors Hospital, Perpetual Help Dalta Medical Center, Cebu Velez General Hospital, FAME Leaders Academy, Philippine Society of Hypertension Secretariat.

Funding

Omron provided devices used for MMM18 through the International Society of Hypertension; Servier Philippines shouldered the logistics in the setting up of some screening sites.

Conflict of interest: RRC: member of speakers bureau and advisory board of Servier, Boehringer-Ingelheim, Menarini, LRI-Therapharma, AstraZeneca, Sanofi, UAP Pharma, Trianon, FAME Publishing; DDM: member of Board of Directors of Manila Doctors Hospital, international research grants from Astra Zeneca, Bayer Pharma, PHRI Canada; chairman/member of advisory board and speakers' bureau of Astra Zeneca, LRI

Therapharma, Bayer Pharma, Menarini, Pfizer Pharma, Sanofi; DIDO: membership of advisory board of Sanofi; speakers' bureau of Servier, MSD, Pfizer, Sanofi, GSK; research grant from Pfizer; RVO: medical director, Astellas Pharma; LMA, AAA, CNG.

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