

May Measurement Month 2019: an analysis of blood pressure screening results from Malaysia

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Despite hypertension remaining the leading cause of death worldwide, awareness of hypertension and its control rate is still suboptimal in Malaysia. This study aims to determine the proportion of both diagnosed and undiagnosed hypertension, awareness and its control rate during the yearly May Measurement Month (MMM) campaign that has been coordinated by the International Society of Hypertension. Participants aged ≥ 18 years were recruited at various screening sites namely universities, health facilities, shopping malls, and other sites. Participant's socio-demographic, environmental, and lifestyle data were captured using a questionnaire. Three blood pressure (BP) readings as well as anthropometric measurements were obtained from all participants. The mean of the second and third BP readings was used in analyses. Hypertension was defined as a systolic BP ≥ 140 mmHg and/or diastolic BP ≥ 90 mmHg or taking antihypertensive medication. A total of 3062 participants were recruited. The proportion with hypertension in our study was 18.7% ($n = 572$). The proportion who were aware of their BP status was 63.2%. More than half (57.2%) of the hypertensives were on antihypertensive medication and 70.3% of those treated were

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controlled. In conclusion, in this BP screening campaign, one in five were hypertensive with almost two thirds aware of their hypertensive status. BP control among those who are taking medications was high at 70% but under 60% of hypertensives were on treatment. Hypertension screening programmes are important to promote awareness and control of hypertension as well as to reduce the devastating complications associated with this disorder.

Introduction

In the latest 2019 National Health and Morbidity Survey, the overall prevalence of hypertension among adults aged 18 years and above was 30.0%, while it was 30.3% in the 2015 survey.^{1,2} Non-communicable diseases including hypertension are the leading cause of death worldwide and in Malaysia, account for 67% of premature mortality, and over 70% of disease burden in 2014.¹ Cardiovascular diseases alone accounted for 35% of deaths in Malaysia.³ Malaysia was invited by the International Society of Hypertension in its inaugural worldwide blood pressure (BP) screening campaign in conjunction with World Hypertension Day in 2017 and has been participating in the May Measurement Month (MMM) campaign yearly.

As compared to the screening campaign in 2017, in 2018, there was a fall in the proportion of hypertension from 32.4% to 28.9%.^{4,5} Another major finding in the 2018 study was that the proportion of hypertensives aware of having hypertension was 76.3% which was much higher than the National Health and Morbidity Survey (NHMS) 2015 rate of 43.2%.^{2,5}

In 2019, we once again participated in the MMM2019 BP screening campaign due to our high prevalence of hypertension and high mortality due to cardiovascular diseases.¹⁻³

Methods

This MMM 2019 study in Malaysia was led by Prof Dr Yook Chin Chia, assisted by Assoc Prof Dr Siew Mooi Ching and Dr Navin Kumar Devaraj. Ethical clearance was obtained from the National Medical Research Register (NMRR-19-1137-46868). There were 18 screening sites with two in East Malaysia and the rest in West Malaysia. A total of 40 investigators were involved. Investigators were trained electronically through e-mails and WhatsApp as most had participated in MMM 2017 and 2018 previously. The study was mainly self-funded by the individual investigators with around USD500 sponsorship given by the Malaysian Society of Hypertension to reimburse certain transportation and printing costs. Recruiting of participants were carried out in various locations including shopping malls, health campaigns, theme parks, universities, as well as health clinics and a hospital. Screening started on 1 May 2019 and ended on 31 July 2019. Omron HEM-7121, JPN1 and HBP-1300, Rossmax X1, Microlife B-A2-Basic and Beurer BM-28 digital BP sets were used for this study. BP was measured three times in a seated position on the upper arm using these

validated BP machines by various professional bodies (International Society of Hypertension, International Society of Hypertension and British Society of Hypertension) according to the standard MMM protocol.⁶ The mean of the second and third readings was used in analyses.

Hypertension was defined as systolic BP ≥ 140 mmHg or diastolic BP ≥ 90 mmHg or on treatment for hypertension.⁶ Data collection was collected via a self-administered hard copy questionnaire and captured in an Excel format. Local data were cleaned by Dr Navin Kumar Devaraj and analysed centrally by MMM project team. Multiple imputation was performed for second or third BP readings that were missing.⁶

Results

There were 3062 participants. The mean age of the participants was 35.9 ± 15.5 years with the majority of the participants being female (63.7%). The highest race represented in this study was Malays (60.6%) with least in the others ethnic group category (5.4%).

There were only 214 (7.0%) of participants who had never had their BP measured before. One hundred and eighty-five (6.0%) and 118 (3.9%) were on statins and aspirin, respectively. A total of 2094 participants out of the total of 3062 had three sitting BP measurements while the rest had one or two BP measurements.

The proportion of participants with hypertension in our study was 18.7% ($n = 572$). The proportion of hypertensives who were aware of their BP status was 63.2%. More than half (57.2%) of the hypertensives were on medications and 70.3% among those treated were controlled (*Table 1*). Hence, 35 out of 362 (9.7%) who were aware of their hypertension diagnosis were not on medication while 90.3% (327/362) were on medications.

Discussion

In MMM 2019, the proportion of participants with hypertension was 18.7% which is much lower than that of the proportion of 32.4% in 2017 and 28.9% in 2018.^{4,5} This low proportion when compared to the national prevalence of 30.0% in 2019 could be a result of the participants who took part in this study being younger (mean age in this study was 35.9 years vs. 39.8 years in 2018 and 45.4 in 2017). What this tells us is that an opportunistic BP screening campaign may have advantages such as allowing more younger people to come forward to be screened for hypertension. This is important as published literatures have reported low hypertension diagnosis prevalence in younger people meeting

Table 1 Total participants and proportions with hypertension, awareness, on medication, and with controlled BP

Total participants	Number with hypertension (n, %)		Number of hypertensives aware (n, %)		Number of hypertensives on medication (n, %)		Number of those on medication with controlled BP (n, %)		Number of all hypertensives with controlled BP (n, %)	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
3062	572, 18.7%	2490, 81.3%	362, 63.2%	210, 36.8%	327, 57.2%	245, 42.8%	230, 70.3%	97, 29.7%	230, 40.2%	342, 59.8%

the criteria for diagnosis.^{7,8} The proportion who were aware of their hypertension status in this year's screening remains high at 63.2%. The awareness in the previous year was also high at 76.3%.⁵ Our lower awareness this year could have been contributed to the larger proportion of younger participants who are known to have lower awareness.⁹ Nevertheless, the awareness reported this year is still better than the national awareness of 37.5% reported several years ago.⁹ This could be a benefit of continuous BP screening which could potentially increase awareness rates.

The strength of our study is a large sample size and multiple sites of screening throughout the country including both rural and urban areas although clearly by design, it was not a nationally representative sample.

In conclusion, in this BP screening campaign, the proportion of hypertension was lower compared to previous MMM campaigns with high awareness of hypertension status. BP control among those who are taking medications was good but hypertension treatment rates were suboptimal.

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