

Blood pressure screening results from May Measurement Month 2019 in Vietnam

Huynh Van Minh¹, Neil R. Poulter¹¹, Nguyen Lan Viet², Cao Thuc Sinh³, Phan Nam Hung⁴, Nguyen Thi Mong Ngoc⁵, Ngo Van Hung⁶, Tran Kim Son⁷, Nguyen Ta Dong⁸, Doan Chi Thang⁸, Nguyen Duc Thuan⁹, To Anh Tuan¹⁰, Thomas Beaney^{11,12}, Giles Partington¹¹, and Hoang Anh Tien¹

¹Department of Cardiology, University of Medicine and Pharmacy, Hue University, 6 Ngo Quyen, Hue City 530000, Thua Thien-Hue province, Vietnam

²Department of Cardiology, Vietnam Heart Institute, 1 TonThatTung, Hanoi 100000, Vietnam

³Department of Cardiology, Vinh Medical School, 161 NguyenPhongSac, NgheAn province, Vinh 460000, Vietnam

⁴Department of Cardiology, Qui Nhon Hospital, 106 NguyenHue, BinhDinh province, Qui Nhon 820000, Vietnam

⁵Department of Administration, Phu Yen Health Service, 4 ToHuu, PhuYen province, TuyHoa 620000, Vietnam

⁶Department of Cardiology, Daklak Hospital, 2 MaiHacDe, BanMeThuot 630000, Daklak province, Vietnam

⁷Department of Cardiology, CanTho Medical and Pharmacy University, 179 NguyenVanCu, CanTho City 900000, Vietnam

⁸Department of Cardiology, Hue Central Hospital, 16 LeLoi, Hue 530000, Thua Thien-Hue province, Vietnam

⁹Department of Administration, LamDong Health Service, 6 TranHungDao, province, Dalat 670000, LamDong, Vietnam

¹⁰Department of Endocrinology and Cardiovascular Disease, Northern QuangNam Hospital, 510000 QuangNam, Vietnam

¹¹Imperial Clinical Trials Unit, Imperial College London, 68 Wood Lane, Stadium House, London W12 7RH, UK; and

¹²Department of Primary Care and Public Health, Imperial College London, St Dunstan's Road, London W6 8RP, UK

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Elevated blood pressure (BP) is a growing burden worldwide, leading to over 10 million deaths each year. May Measurement Month (MMM) is a global initiative to raise awareness of high BP and act as a temporary solution to the lack of screening programmes worldwide. We aimed to screen for hypertension and cardiovascular risk factors in people aged ≥ 18 years in the community, thereby defining the proportion of subjects with elevated BP and assess the awareness and the effectiveness of its treatment. An opportunistic cross-sectional survey of volunteers aged ≥ 18 years was carried out in May 2019. Blood pressure measurement, the definition of hypertension and statistical analysis followed the standard MMM protocol. From May 2019 to June 2019, through 10 cities/provinces in Vietnam, 25 887 individuals with mean age 48.7 (SD ± 17.7) years were screened. After multiple imputations, 8758 (33.8%) had hypertension. Of individuals not receiving antihypertensive medication, 3025 (15.0%) were hypertensive. Of individuals receiving antihypertensive medication, 2800 (48.8%) had uncontrolled BP. Raised BP [systolic BP (SBP) ≥ 140 mmHg and/or diastolic BP (DBP) ≥ 90 mmHg] was also associated with additional risk factors including smoking, alcohol intake, previous hypertension in pregnancy, and obesity. May Measurement Month 2019 was the most extensive BP screening campaign ever undertaken in Vietnam. Undiagnosed and uncontrolled hypertension in Vietnam remains a

substantial health problem. Local campaigns applying standardized methods such as MMM 2019 will be beneficial to screen for the significant number of individuals with raised BP and increase the awareness of hypertension.

Introduction

Hypertension (HTN) remains a burden not only for developed countries but also for developing countries. Vietnam is located in the Asia Pacific region, which has a high HTN prevalence. In Vietnam, from 1960 to 2008, the rate of hypertension in adults increased 25 times from 1% to 25.1%.^{1,2} This is an alarming number because hypertension causes serious complications such as, heart attack, stroke, and death. Annually in Vietnam, hypertension causes 91 000 deaths (20.8% of total deaths) and 7.2% of Disability Adjusted Life Years lost, mainly through an increase of stroke and cardiovascular disease.³ However, hypertension can be treated and managed in the community. Therefore, researching to investigate the rate of hypertension in the community to have effective management strategies is very urgent. The May Measurement Month (MMM) programme in 2017 and 2018^{4,5} was enthusiastically responded to by the Vietnam National Heart Association/Vietnam Society of Hypertension (VNHA/VSH) by launching and deploying the campaign across the whole country. The goal of the MMM 2019 programme in Vietnam was to screen at least 20 000 people aged ≥ 18 across the country continuing to raise awareness and inform participants of the risks associated with hypertension as well as to inform governmental organizations to strengthen the existing hypertension prevention programme further.

Methods

This study was a cross-sectional descriptive survey. The campaign duration was from May to June 2019. In MMM 2019, 10 cities and provinces of the three regions of Vietnam were selected from the North (Ha Noi, Vinh, and Thanh Hoa) to the Central and Highlands (Hue, Da Nang, Qui Nhon, Tuy Hoa, Nha Trang, and Daklak) and in the South of Vietnam (Ho Chi Minh City and Can Tho). The survey took place in very diverse locations including hospitals, clinics, pharmacies, and public areas.

The convenience sampling resulted in people aged ≥ 18 voluntarily participating. The inclusion criteria were that the participants were well physically, mentally, and ready to cooperate. The exclusion criteria were those who were physically or mentally unwell, under 18 years old, refused to participate in the study, as well as those who were being treated for hypertension in hospitals. The VNHA/VSH executive committee or the directors of the local health departments were the investigators.

Volunteers were members of the Red Cross, the VNHA/VSH, among others, as well as medical students. The method of blood pressure (BP) measurement was according to the guidance of the MMM 2019 programme.⁶ The

screening protocol was approved by the VNHA/VSH and the University of Medicine and Pharmacy in terms of ethics. Blood pressure machines were semi-automatic OMRON HEM-7121. The BP method was based on the ISH protocol for MMM noting especially that the time between BP measurements was 1 min with three measures taken, allowing the average BP of the 2nd and 3rd measurements to be calculated and used in the analysis. Where either or both measures was missing, the mean was imputed using multiple imputations based on the global data.⁶ Hypertension was defined as systolic BP (SBP) ≥ 140 mmHg and/or diastolic BP (DBP) ≥ 90 mmHg or on antihypertensive treatment.

Body mass index (BMI) was classified according to WHO standards. The survey questionnaire provided by the ISH for the MMM programme was used.⁶ Data were collected using Excel 2013 and processed and analysed by the MMM team.

Results

The MMM 2019 programme attracted more participants with 25 887 individuals compared with MMM 2018 which involved 17 332 people and MMM 2017 with only 10 993 people. In addition to some people who have had their BP measurement before, 17.3% of people had never had a BP measurement taken before. Compared with those screened in MMM 2017 and 2018, the population with cardiovascular risk factors such as diabetes, smoking, and drinking alcohol, the rate was higher among MMM 2019 screenees. After imputation, of all 25 887 participants in the MMM 2019 programme, 8758 (33.8%) had hypertension, which was higher than the proportion in 2018 (30.3%) and 2017 (28.7%). Of those with hypertension, 69.8% were aware of their diagnosis and 65.5% were on antihypertensive medication, of whom 51.2% were controlled. Of all hypertensives, 33.5% were controlled. In the MMM 2018 results, there were 5260 (30.3%) cases of hypertension, which was higher than in 2017 (28.7%). Of those with hypertension in 2018, 66.4% were aware of their diagnosis and 62.8% were on medication, of whom 53.4% were controlled. This is in comparison to the MMM 2017 results, where 52.1% of hypertensives were on medication but 62.3% of these were controlled.

Based on linear regression models adjusted for age and sex (with an interaction) and antihypertensive medication, patients who were current smokers and regular alcohol drinkers (once or more per week) were associated with higher SBP and DBP measurements (*Figure 1*). Similarly, participants who were overweight or obese compared with those with a healthy BMI had higher SBP and DBP measurements. Conversely, underweight vs. healthy weight patients had lower levels of BP.

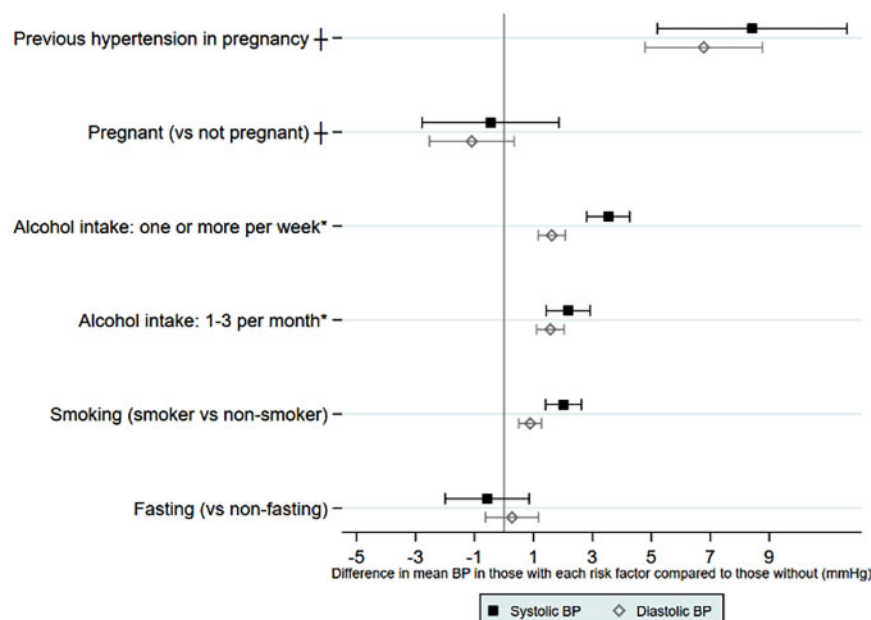


Figure 1 Difference in mean blood pressure in those with each risk factor compared with those without from linear regression models adjusted for age, sex, and antihypertensive medication (pregnancy-related factors adjusted for age and antihypertensive medication alone).

Discussion

In general, the MMM 2019 campaign secured higher numbers of participants in Vietnam than previous MMM campaigns. This can be explained by the team being more familiar with the activities of the programme. The programme has made an impact on the medical community and many centres participated even though we were still very limited in funding. There are two problems that need to be discussed: the proportion found with hypertension is still high and what are the main risk factors that can explain the apparent increasing proportion of participants with hypertension?

Through our three MMM 2017,⁷ MMM 2018,⁸ and MMM 2019 campaigns, the proportion of people detected with hypertension was higher in 2019 than the previous surveys and more similar to the global results of the MMM 2017 (34.9%), MMM 2018 (33.4%), and MMM 2019 (33.8%). Almost one-third of those with hypertension were not aware of their condition. This is also notable because this dangerous disease has not been controlled despite many efforts being made by our national health sector in recent years.¹

Therefore, it is still essential to determine the main risk factors for hypertension in Vietnamese people. In fact, many risk factors for hypertension have been mentioned, but in our socio-economic development, the residential area's movement remains a factor of concern. Nearly 20 years ago, we initially identified insulin resistance as a new risk factor for hypertension in Vietnam.⁹ In 2015, the prevalence of overweight-obesity was up to 15.0% but another study showed that the obesity rate reached 23.0%, diabetes 5.9%, and lipid disorders 56.2%.¹⁰ Obesity is not only causally linked to hypertension but also to diabetes. Obesity and metabolic disorders, which used to be uncommon in the last few decades, have become predominant.

However, the number of subjects with diabetes in the MMM survey was relatively small, possibly as it was self-reported due to lack of appropriate tests and tools for examining the patients' blood glucose in our study. In the supplement of the MMM 2017 programme attached to the online report, there was a strong positive correlation of BMI and BP in Vietnamese people,⁷ similar to the global MMM 2017, 2018, and 2019 results.^{4,5}

In conclusion, MMM 2019, a continuation programme of MMM 2018 and MMM 2017, has promoted BP screening in the community in Vietnam and increased awareness of disease prevention in our country. Indeed, the programme's next steps will have outstanding innovations on reducing the frequency of focusing on variable risk factors to change the overall picture of hypertension in the world and in Vietnam.

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