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

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Previous studies have shown that among Bangladeshi adults, one-fifth have hypertension. The National Heart Foundation of Bangladesh participated in May Measurement Month (MMM) campaigns in 2017, 2018, 2019, as well as in 2021 as a part of a global initiative aimed at raising awareness of high blood pressure (BP) and to act as a temporary solution to the lack of nationwide screening programmes. This opportunistic screening of voluntary participants aged ≥18 years was carried out from May to July 2021. Data were collected from more than 150 screening sites in all 64 districts in Bangladesh. Blood pressure measurement, the definition of hypertension, and statistical analysis followed the MMM protocol. Data on 28 355 individuals were finally analysed. Among the participants, 17 941 (63.3%) were female. After multiple imputation, 11 194 (39.5%) had hypertension. Among the 11 194 participants with hypertension, 78.8% were aware of having hypertension and 65.6% were on antihypertensive medication. Among 11 194 participants with hypertension, 7340 participants (65.6%) were on antihypertensive medication and 43.8% had controlled BP (<140/90 mmHg). Of those on antihypertensive medication, 66.8% had controlled BP. A voluntary BP screening programme can identify significant numbers of people with raised BP and thus contributes importantly to the prevention of cardiovascular diseases.

Introduction

Hypertension is the leading preventable risk factor for cardiovascular disease (CVD) and all-cause mortality worldwide,[1,2,3] and every year, nearly 10.8 million deaths that occur around the globe are directly or indirectly related to hypertension.[4] The prevalence of hypertension is rising globally owing to ageing of the population and increases in exposure to lifestyle risk factors including unhealthy diets.[1,5]

The 2018 World Health Organization (WHO) NCD STEP survey in Bangladesh has reported that 21% of adults

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aged 18 years or more had hypertension, while half of them (51.3%) were unaware of their hypertensive status revealing a large diagnosis gap.[6] Opportunistic blood pressure (BP) screening can identify significant numbers of people with raised BP and thus assist in the prevention of CVDs.

To achieve a target of 25% relative reduction of prevalence of raised BP by 2025 relative to 2010 levels, the government of Bangladesh has adopted a multisectoral action plan to control NCD and initiated different programmes in line with the WHO Global Action Plan.[7] However, there is a lack of regular community-based screening programmes for the detection of high BP. The National Heart Foundation of Bangladesh (NHFB) has been working for control and prevention of CVDs and coordinated the conduct of May Measurement Month (MMM) events in Bangladesh, in 2017, 2018, and 2019 in collaboration with government and non-government organizations throughout the country with technical support from International Society of Hypertension (ISH) and the MMM central team.[8-10] In 2020, the MMM campaign was deferred due to COVID-19, but in 2021, the NHFB once again participated in MMM and organized screening in all 64 districts of Bangladesh.

Methods

The MMM21 screening programme was coordinated by the leadership of the Hypertension Committee of the NHFB. Screening was conducted by volunteers of the NHFB, Affiliated Bodies of the NHFB, and the Department of Non-Communicable Disease of Bangladesh University of Health Sciences in more than 150 sites in all 64 districts in Bangladesh with the technical assistance from the ISH. Several local pharmaceutical companies provided logistic support for setting up sites in the communities. Leaflets and posters with health messages regarding hypertension and its risk factors were distributed in the locality to inform people about screening sites and dates. Adults (aged ≥18 years) were the main target population.

Study participants were volunteers who were recruited through the advertising campaign (leaflets and posters). Screening was conducted according to the MMM protocol,[11,12] and verbal consent was taken from each participant. Data were collected using paper versions of a questionnaire designed by MMM. Information about demographic, lifestyle, and environmental factors were collected, and each participant had their BP measured and recorded three times. Blood pressure was measured using an electronic BP machine (Omron, model: JPN 1) largely provided by the ISH at the time of the MMM 2018 campaign. Data were entered in spreadsheets developed by the MMM project team and were sent to the MMM secretariat for analysis.

Hypertension was defined as either systolic BP (SBP) ≥ 140 mmHg and/or diastolic BP (DBP) ≥ 90 mmHg (based on the mean of the second and third BP readings) or being on any anti-hypertensive drug.[13] Detailed methods of the programme and analysis have been published earlier.[11,12] To provide a comparable BP reading for all individuals, if three BP readings could not be collected, multiple imputation using chained equations was used to estimate the average of the second and third readings where either reading was not documented, using the global data.[11] Further analyses make use of the mean of the second and third BP readings for each participant, as the most conservative estimate. Ethical approval for the screening programme (ref no. NHFH&RI 4-1/14/Ad-/859 dated 3 June 2021) was obtained from the Ethics Review Committee of the National Heart Foundation Hospital & Research Institute, Bangladesh.

Results

A total of 28 355 participants (63.3% women) had at least 1 BP measured and were included in the analysis. The mean [standard deviation (SD)] age of participants was 42.8 (14.3) years. About 17.5% (4974) of the participants had never had their BP measured, and 18.4% did not have BP measurements taken within last the last 12 months. A total of 87.7% of the participants had not participated in previous MMM events. Among the study participants, about 15.4% were smokers, 26.8% had diabetes (self-reported), and 4.6% and 4.8% were taking aspirin and statins, respectively. About 64.8% reported that they had one or more previous COVID-19 vaccination.

Based on the inclusion criteria, all 28 355 participants had at least 1 BP reading and 11 392 had all three BP readings recorded. Among the participants who had all three BP readings, mean systolic and diastolic BP were 126.4 and 80.8 mmHg, respectively.

After multiple imputation of missing BP readings, 11 194 (39.5%) were identified as having hypertension. Among the 11 194 participants with hypertension, 78.8% were aware of their hypertension status, 65.6% were on antihypertensive medication, and 43.8% had controlled BP (<140/90 mmHg). Among the 7340 participants on antihypertensive medication, 66.8% had controlled BP (*Table 1*).

Discussion

The NHFB, in collaboration with several other organizations, screened 28 355 adults during the MMM21 campaign. The proportion of hypertensives among the participants was 39.5% which is significantly higher than the national prevalence of 21% reported in 2018. This higher rate might be due to voluntary participation in 2021 and that screening took place mainly in clinic settings. The relatively high proportion of awareness about hypertensive status (78.8%) among hypertensive

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

Total participants	Percentage of hypertension	Percentage of hypertensives aware	Percentage of hypertensives on medication	Percentage of those on medication with controlled BP	Percentage of all hypertensives with controlled BP
28 355	39.5%	78.8%	65.6%	66.8%	43.8%

screenees in 2021 again might be due to the opportunistic screening of people who may have been more likely to be aware of their condition. Despite the high awareness, only 43.3% had their BP controlled, indicating that a gap in effective treatment also needs to be addressed in this population.

The NHFB took part in the MMM campaigns of 2017, 2018, and 2019. The previous three MMM campaigns showed wide variations in the percentage of hypertensive individuals and percentage of uncontrolled BP among the individuals receiving anti-hypertensive medication. In the MMM17, 47.3% were hypertensive and 52.2% uncontrolled[8]; in the MMM18, 33.6% and 33.6%[9]; and in the MMM19, 28.0% and 35.8%,[10] respectively. The MMM21 is the largest BP screening campaign in Bangladesh, and among the participants with hypertension and on antihypertensive medication, 66.8% had controlled BP (*Table 1*). These differences are most likely to reflect the different populations screened each year. However, awareness of hypertension status among the hypertensive patients was very similar in all four MMM campaigns. Therefore, nationwide hypertension screening programmes like MMM provide the opportunity to identify significant numbers of people with raised BP as well as provide valuable information regarding the efficacy of treatment.

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Conflict of interest: none declared.

Data availability

Data would be made available upon a request to and approval from MMM secretariat.

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