

May Measurement Month 2017: an analysis of blood pressure screening results in Georgia—Europe

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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 aimed at raising awareness of high BP and to act as a temporary solution to the lack of screening programmes worldwide. According to STEPS-Georgia, between 2010 and 2016, arterial hypertension prevalence (BP \geq 140/90 mmHg or being treated) increased from 33.4% to 37.7%. According to the Health for All (HFA) (WHO data set) Database in Georgia in 2015 cardiovascular disease (CVD) mortality contributed to 42.6% of overall deaths; among them 23.3% is due to coronary heart disease (CHD), and 30% due to cerebrovascular diseases. An opportunistic screening of volunteers aged \geq 18 was carried out in May 2017 (MMM17). BP measurement, the definition of hypertension and statistical analysis followed the standard MMM protocol. Screening was carried out in 50 sites at a national scale (clinics, public places). Five hundred volunteers, mostly medical personnel took part in the project. A total of 6144 individuals were screened during MMM17. After multiple imputations, 3744 (60.9%) had hypertension. Of those not on anti-hypertensive medication, 958 (28.5%) respondents were found to have hypertension, while 1862 (66.8%) individuals receiving anti-hypertensive medication, had uncontrolled BP. MMM17 was the largest BP screening campaign undertaken in Georgia. Approximately 60% of those screened had hypertension and among those who receive medication, up to 70% are treated inadequately. These results suggest that opportunistic screening can identify a significant number of people with raised BP.

Background

Arterial hypertension—the major risk-factor of cardiovascular diseases, constitutes 30–45% of the adult population in the world. According to STEPS-Georgia, between 2010 and 2016, arterial hypertension [blood pressure (BP) \geq 140/90 mmHg or being treated] prevalence increased from 33.4% to 37.7%.¹

According to the Health for All (HFA) (WHO data set) Database in Georgia in 2015 cardiovascular disease (CVD)

mortality contributed to 42.6% of overall deaths. Among the causes of death, 23.3% is due to coronary heart disease (CHD) and 30% is due to cerebrovascular diseases.² The share of hypertension as a cause of death in Georgia moved from the 5th (2005) to the 3rd (2017) position.² The Georgian Society of Hypertension (GSH), as a member of the International Society of Hypertension, was offered to participate in MMM17.

Methodology

The national co-ordinator of the hypertension screening campaign in Georgia is Dr D.T. Ethical clearance was

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received in March 2017 (NCDC Institutional Review Board). Screening was carried out in 50 sites at a national scale. More than 500 volunteers, including doctors (80%) and medical students (20%), participated in the screening. To familiarize with the research tools and standard BP measurement method, their training in Tbilisi and other large cities was conducted by GSH working group. Financial support of the project was ensured by pharmaceutical companies, GSH and NCDC. Screening activities at the national level became possible by using human resources of the NCDC regional network. Social and mass media, medical societies, and other stakeholders were actively involved in the recruitment process. MMM17 campaign started on 4 May and lasted for 1 month.

In 30% of cases BP was measured three times, in the sitting position using Omron devices. In the other 70% of cases manual monitors were used. Hypertension was defined as $SBP \geq 140$ or $DBP \geq 90$ or on anti-hypertensive treatment. Information about anthropometric measurements (height and weight) was self-reported.

Information was collected on paper forms and subsequently data were entered in the Excel file. Data analysis was performed by the May Measurement Month

(MMM) project group member Xin Xia, using Stata version 14.2.

Results

A total of 6144 people were screened. Mean age of participants is 55.7 years (SD 16.3). After multiple imputations, the number of participants with hypertension is 3744 persons (60.9%). Of 3358 not taking medication, 958 (28.5%) are hypertensive. The total number of participants on anti-hypertensive medication is 2786 persons, of which 1862 (66.8%) had uncontrolled BP.³

After adjustment for age and sex (allowing for an interaction), significantly higher systolic and diastolic BPs were apparent in the people receiving anti-hypertensive treatment (*Figure 1*).³ After adjusting for age, sex, and anti-hypertensive treatment, systolic and diastolic BPs were significantly higher in people with diabetes (*Figure 1*) and high body mass index (see Supplementary material online, *Figure S1*).³ In contrast, BP readings in pregnant women, in people with a previous history of myocardial infarction, and in those measured on the left arm were significantly lower than readings from the relevant comparator groups (*Figure 1*).³

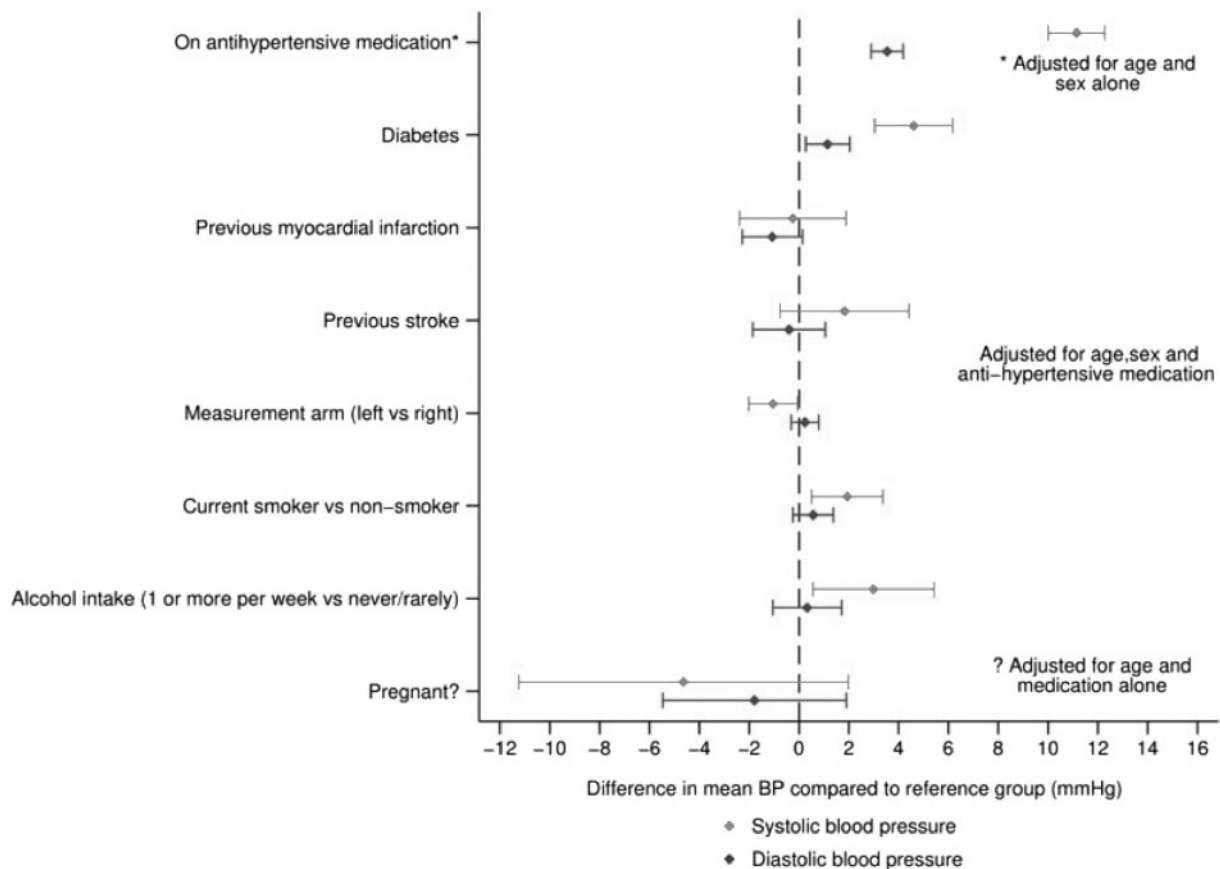


Figure 1 Difference in mean blood pressure according to individual characteristics from linear regression model adjusted for age, sex, and anti-hypertensive medication (except where annotated).

Discussion

The major shortcoming in the arterial hypertension management in the Georgian population is a serious defect in medical treatment (deficit of titration visits, frequent changes of anti-hypertensive drugs, interruption in treatment, low compliance to the treatment process, etc.), along with the lack of active surveillance.

The rate of uncontrolled hypertension highlights the inefficiency of drug control/management of hypertension according to different sources was as follows: STEPS 2010–88%; Migrant Health Survey 2012–75%; STEPS 2016–83%; and MMM17–68%.¹ With regards to the regime, the STEPS 2016 revealed that, 33.6% of respondents take anti-hypertensive drugs only when BP increases and 3.2% only when they remember. 8.3% of respondents misclassified drugs from other categories as anti-hypertensive drugs.¹

MMM17 was an important activity for assessing the major public health problem of the country. The results will serve as a basis for policymakers in defining the vector for hypertension prevention and control interventions.

Owing to the absence of upper age limit in persons observed in the 2017 screening campaign, the hypertension prevalence rate is high, compared with previous years.

Depending on the inefficiency of hypertension control/management, the need for educational interventions in physicians as well as in patients has been justified.

Supplementary material

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

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References

1. Mebonia N, Sturua L, Gamkrelidze A, Kakutia N. *Noncommunicable Diseases Risk-factors STEPS Survey Highlights*. National Center for Disease Control and Public Health. <http://www.ncdc.ge/Pages/User/LetterContent.aspx?ID=c274a8b5-c4ba-4836-a460-0da465769f6a> (21 December 2018).
2. Gamkrelidze A, Kereselidze M, Gambashidze K. *Health Care, Statistical Yearbook Georgia 2017, Ministry of Internally Displaced Persons from the Occupied Territories, Labour, Health and Social Affairs of Georgia*. National Center for Disease Control and Public Health. <http://www.ncdc.ge/Handlers/GetFile.ashx?ID=114b7ef6-0fa1-424a-9c01-6af08ffa63cc> (21 December 2018).
3. Beaney T, Schutte AE, Tomaszewski M, Ariti C, Burrell LM, Castillo RR, Charchar FJ, Damasceno A, Kruger R, Lackland DT, Nilsson PM, Prabhakaran D, Ramirez AJ, Schlaich MP, Wang J, Weber MA, Poulter NR; MMM Investigators. May Measurement Month 2017: an analysis of blood pressure screening results worldwide. *Lancet Glob Health* 2018; 6:e736-e743.