

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

Gentiana Qirjako<sup>1,2,†</sup>, Iris Mone<sup>1,†</sup>, Thomas Beaney<sup>3,4</sup>, Xin Xia<sup>3</sup>,  
Xheladin Draçini<sup>1</sup>, Neil R. Poulter<sup>3</sup>, Albana Fico<sup>1,2</sup>, Alban Ylli<sup>1,2</sup>,  
Rudina Çumashi<sup>2</sup>, Enver Roshi<sup>1</sup>, and Genc Burazeri<sup>1,5</sup>

<sup>1</sup>Faculty of Medicine, University of Medicine, Rr. "Dibres", No. 371, Tirana, Albania

<sup>2</sup>Institute of Public Health, Rr. "Aleksander Moisiu", No. 80, Tirana, Albania

<sup>3</sup>Imperial Clinical Trials Unit, Imperial College London, Stadium House, 68 Wood Lane, London W12 7RH, UK

<sup>4</sup>Department of Primary Care and Public Health, Imperial College London, St Dunstan's Road, London W6 8RP, UK; and

<sup>5</sup>Department of International Health, School CAPHRI (Care and Public Health Research Institute), Maastricht University, P.O. Box 616, 6200 MD, Maastricht, The Netherlands

## KEYWORDS

Albania;  
Blood pressure;  
Control;  
Hypertension;  
Screening;  
Treatment

This article discusses the results of the May Measurement Month (MMM) 2019 campaign, which contributed to a third round of MMM hypertension screening campaigns carried out in Albania, a transitional country in the Western Balkans. The hypertension screening campaign in Albania was carried out during the period 1-31 May 2019 in 30 sites in many districts of the country. Overall, 19 154 participants aged  $\geq 18$  years were included (approximately 68% of these were women), with an overall mean age of  $47.0 \pm 15.3$  years. Blood pressure (BP) was measured with OMRON sphygmomanometers (Omron Healthcare, Kyoto, Japan). Hypertension was defined as systolic BP  $\geq 140$  mmHg, or diastolic BP  $\geq 90$  mmHg, or on treatment for hypertension. Self-reported data consisted of height and weight, pre-existing conditions, including smoking status and alcohol consumption. Overall, the proportion of participants with hypertension was 38.6%. Less than two-thirds (64.7%) of hypertensive individuals were aware of their condition. Also, less than half (48.3%) of participants on antihypertensive medication had controlled BP ( $< 140/90$  mmHg). The most sizable correlations of high BP were with known hypertension status, use of antihypertensive medication, and obesity. The MMM campaign contributes to routine hypertension screening in Albania. Hence, health professionals and policymakers in Albania should act on the findings of MMM screening campaigns and continue its support as a valuable tool for early detection of hypertension in the general population.

## Introduction

In Albania, almost one in three individuals aged  $\geq 18$  years has been reported to have hypertension.<sup>1</sup> Yet, despite the high prevalence, hypertension awareness is low in the

Albanian general population.<sup>2</sup> In 2019, high systolic blood pressure (SBP) was estimated to account for one-third of all-cause mortality in the Albanian population and almost one-fifth of the overall disability-adjusted life years (DALYs).<sup>3</sup> Cardiovascular diseases in Albania constituted 57% of all deaths and 29% of the overall burden of disease in 2019.<sup>3</sup> For the same year, ischaemic heart disease accounted for 27% of overall mortality and 13% of the overall DALYs.<sup>3</sup> In turn, stroke was responsible for one in four

\*Corresponding author. Tel: +355 674077260, Email: genc.burazeri@maastrichtuniversity.nl

<sup>†</sup>The first two authors contributed equally to the study.

deaths and 12% of the overall burden of disease in the Albanian population in 2019.<sup>3</sup>

Albania became part of the May Measurement Month (MMM) initiative for the first time in 2017 and subsequently participated in the 2018 campaign. According to the findings of the MMM campaign conducted in 2018,<sup>4</sup> the prevalence of hypertension among survey participants was about 37% of whom, only about half exhibited awareness (52%). Also, only a quarter of hypertensive participants were appropriately treated and controlled.<sup>4</sup>

The current article reports on the results of the MMM 2019 campaign in Albania, a transitional country in the Western Balkans, which contributed to the third round of the annual MMM hypertension screening campaign.

## Methods

Similar to previous years, there were two coordinators for the MMM 2019 campaign in Albania (the first author and the senior author of this article), both affiliated with the University of Medicine in Tirana.

The ethical clearance for the MMM campaigns in Albania was provided by the Scientific Council of the National Institute of Public Health since November 2017.<sup>4</sup>

Thirty sites were included in the MMM 2019 campaign in Albania: two sites in Tirana district (the capital) and one site in each of the following districts: Berat, Bulqize, Delvine, Devoll, Durres, Elbasan, Fier, Gramsh, Has, Erseke, Korça, Kruje, Kuçove, Kukës, Lac, Lezhe, Librazhd, Lushnjë, Malësi e Madhe, Burrel, Mirdite, Permet, Pogradec, Puke, Sarandë, Shkoder, Skrapar, Tropoje, and Vlora.

Overall, there were 52 investigators involved in the MMM campaign conducted in Albania in 2019, who were health promotion specialists working at local health care units from all sites included in the campaign. In addition, ten students from the Faculty of Medicine in Tirana participated in the MMM 2019 campaign as volunteers. All investigators and volunteers ( $n=62$ ) were trained in early April 2019. Next, in mid-April 2019, the online questionnaire was piloted in all screening sites prior to the screening implementation in May 2019.

MMM 2019 in Albania was supported by the 'Health for All Project (HAP)' (a project of the Swiss Agency for Development and Cooperation), the Institute of Public Health and the Faculty of Medicine in Tirana.

Similar to previous years, participants were recruited through social media (Facebook), TV talk-shows, and by strong advocacy exerted by the health promotion specialists and volunteers at a community level at all screening sites. Based on successful experiences from previous years, all messages emphasized the importance of blood pressure (BP) screening and the unique opportunity to participate in the MMM campaign.<sup>4</sup> The screening was carried out during the period 1-31 May 2019.

OMRON sphygmomanometer devices (Omron Healthcare, Kyoto, Japan), donated by Omron Healthcare for use in the MMM project,<sup>4</sup> were employed in all screening sites for measurement of SBP and diastolic BP (DBP).

Overall, 90% of the campaign sites were indoor, whereas the remaining 10% were outdoors. All participants underwent three seated recordings of their SBP and DBP measured at one-minute intervals, from either the right or left arm, according to the MMM 2019 protocol.<sup>5</sup>

Hypertension was defined as SBP  $\geq 140$  mmHg, or DBP  $\geq 90$  mmHg (based on the mean of the second and third recordings), or a subject on treatment for hypertension.<sup>5</sup> Height and weight, previous myocardial infarction and/or stroke, presence of diabetes, smoking status and alcohol intake were all based on individual self-reports.

More than two-thirds of data were collected directly via the MMM application and the remaining data via hard-copy forms which were subsequently entered into the MMM application. The MMM project team cleaned the data that had been entered directly into the MMM application, whereas hard-copy data were cleaned locally. Data analysis was conducted centrally by the MMM project team and multiple imputation was performed to impute the mean of readings two and three where this was missing based on the global data.<sup>5</sup>

## Results

The MMM 2019 screening campaign in Albania included 19 154 participants aged  $\geq 18$  years (about 68% women), with an overall mean age of  $47.0 \pm 15.3$  years. Overall, about 97% of participants were ethnic Albanians (Caucasians).

Of all participants, 4580 (23.9%) of participants were on anti-hypertensive treatment; about one in four participants (4559; 23.8%) had not had their BP measured in the past year; 1208 (6.3%) used statins; and 1629 (8.5%) used aspirin (data not shown).

Overall, 7393 participants (38.6%) had hypertension (Table 1), of whom 4580 (62.0%) were on antihypertensive treatment, whereas the remaining 38.0% of participants were not receiving any treatment. Of all 7393 participants with hypertension, 64.7% were aware. Of 4580 participants on antihypertensive medication, 48.3% had controlled BP, and of all 7393 participants with hypertension, 29.9% had controlled BP (Table 1).

After imputation, the age- and sex-standardized proportion of individuals not on antihypertensive medication with hypertension was 21.4%, whereas among participants on antihypertensive treatment, the proportion with uncontrolled BP was 42.4%.

Significant associations of high SBP and high DBP included known hypertension status, use of antihypertensive medication, obesity and, to a lesser degree, frequent alcohol consumption (all  $P < 0.01$ ). In addition, smoking was a weak and borderline statistically significant predictor of both SBP and DBP ( $P = 0.08$  and  $P = 0.09$ , respectively). Furthermore, previous stroke and diabetes were significant predictors of higher SBP only.

## Discussion

The MMM 2019 screening in Albania documented a high proportion of participants with hypertension (38.6%); just

**Table 1** Total participants and proportions with hypertension, awareness, on medication and with controlled blood pressure in the MMM screening campaign conducted in Albania in 2019

Total participants	Number (%) with hypertension	Number (%) of hypertensives aware	Number (%) of hypertensives on medication	Number (%) of those on medication with controlled BP	Number (%) of all hypertensives with controlled BP
19 154	7393 (38.6%)	4783 (64.7%)	4580 (62.0%)	2211 (48.3%)	2211 (29.9%)

under two-thirds (64.7%) of hypertensive individuals were aware of their condition; also, just under half (48.3%) of participants on antihypertensive medication had controlled BP.

Similar to previous years,<sup>4</sup> the MMM 2019 campaign in Albania ascertained many hypertensive cases in the adult population, identification of which may contribute to control and prevention of complications and premature mortality.<sup>2,5</sup>

The MMM campaign contributes to the routine hypertension screening in Albania. Yet, the convenience sampling approach, which may not be nationally representative, does not allow generalisation of the MMM findings to all the adult population of Albania.

Nonetheless, given its large size and scale, the MMM screening campaigns make a unique contribution to prevention and control of hypertension in the general population and should prompt health professionals and policymakers in Albania to act on the findings.<sup>4</sup>

### Acknowledgments

Local investigators and volunteers: Romina Hala, Entela Neziri, Alma Mullai, Valbona Vllacaj Lindita Tapia, Enerta Habipaj, Festime Mjeshtri, Tizjana Spaho, Elena Konakciu, Alkida Ndreka, Helga Kongoli, Kozeta Brazhda, Vjola Tanaka, Sonila Miraka, Arben Xhepexhia, Gledjon Tafili, Nikoleta Grinjoti, Mirela Vata, Alma Isufaj, Klara Dhame, Emerjeta Bulica, Flogerta Kolici, Oligerta Hoxha, Mirela Ndoi, Klodi Kananllari, Marsida Koci, Sebastjan Davidhi, Anila Gjolaj, Suela Muhametaj, Eduart Cakoni, Marjana Jushi, Flora Dodaj, Liri Jano, Ermald Meko, Gjergji Pasko, Shpresa Preka, Argjentina Alikaj, Joana Papagjika, Mimoza Dumaj, Mirjana Idriqi, Klementina Kapxhiu, Mimoza Zoraqi, Sulejman Husha, Arban Shehu, Albert Lala, Enkelejda Ibro, Brunilda Pilo, Manjola Cami, Arjola Hamza, Lidjana Lamaj,

Valentina Bashkurti, Floreta Nelaj, Shege Kola, Adea Llana, Arselda Lala, Grisela Prenga, Hesjona Kaso, Daniela Bardhaj, Manelda Çaushi, Enrieta Kërxfhaliu, Florida Haka, Uendi Dërmyshti.

### Funding

The MMM 2019 in Albania was supported by the following organisations: Swiss Agency for Development and Cooperation (SDC) through the ‘Health for All Project (HAP)’; the MMM project (sphygmomanometers); and the Institute of Public Health and the Faculty of Medicine in Tirana.

**Conflict of interest:** none declared.

### References

1. World Health Organisation. *Noncommunicable Diseases Country Profiles 2018. Country Profile for Albania*. Geneva: World Health Organisation; 2018. [http://www.who.int/nmh/countries/2018/alb\\_en.pdf](http://www.who.int/nmh/countries/2018/alb_en.pdf) (20 November 2020).
2. Pirkle CM, Ylli A, Burazeri G, Sentell TL. Social and community factors associated with hypertension awareness and control among older adults in Tirana, Albania. *Eur J Public Health* 2018;**28**:1163-1168.
3. Institute for Health Metrics and Evaluation. Global health data exchange (GHDx). <http://ghdx.healthdata.org/gbd-results-tool> (20 November 2020).
4. Burazeri G, Qirjako G, Beaney T, Ster AC, Xia X, Ylli A, Muja H, Cumashi R, Dika Q, Roshi E, Poulter NR. May measurement month 2018: an analysis of blood pressure screening results from Albania. *Eur Heart J Suppl* 2020;**22**:H5-H7.
5. Beaney T, Schutte AE, Stergiou GS, Borghi C, Burger D, Charchar F, Cro S, Diaz A, Damasceno A, Espeche W, Jose AP, Khan N, Kokubo Y, Maheshwari A, Marin MJ, More A, Neupane D, Nilsson P, Patil M, Prabhakaran D, Ramirez A, Rodriguez P, Schlaich M, Steckelings UM, Tomaszewski M, Unger T, Wainford R, Wang J, Williams B, Poulter NR; MMM Investigators. May measurement month 2019: the global blood pressure screening campaign of the International Society of Hypertension. *Hypertension* 2020;**76**:333-341.