European Heart Journal Supplements (2024) **26** (Supplement 3), iii5–iii7
The Heart of the Matter
https://doi.org/10.1093/eurheartjsupp/suae045

ESC European Society of Cardiology

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

Xheladin Draçini[1], Rudina Çumashi[2], Gentiana Qirjako[1,2], Thomas Beaney[3,4], Gaia Kiru[3], Carolina Janssen-Telders[3,5], Albana Fico[1], and Genc Burazeri [1,5]*

[1]Faculty of Medicine, University of Medicine, Rr. 'Dibres', No. 371, Tirana 1000, Albania; [2]Department of Noncommunicable Diseases, Institute of Public Health, Tirana, Albania; [3]Imperial Clinical Trials Unit, Imperial College London, London, UK; [4]Department of Primary Care and Public Health, Imperial College London, London, UK; and [5]Department of International Health, CAPHRI (Care and Public Health Research Institute), Duboisdoman 30, 6229 GT, Maastricht University, Maastricht, The Netherlands

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

This article describes the May Measurement Month (MMM) 2021 campaign, which was the fourth time this annual hypertension screening campaign was conducted in Albania, a Mediterranean country in southeastern Europe. The MMM21 was conducted during the period of 28 September–30 November 2021, in 32 sites across several districts of Albania. Overall, 11 788 participants aged ≥18 years were included (63% women), with a mean age of 49.7 ± 14.9 years. Blood pressure (BP) was measured three times with Omron sphygmomanometers (model M3, Omron Healthcare, Kyoto, Japan), which are automatic upper arm BP monitors. Hypertension was defined as SBP ≥ 140 mmHg or diastolic blood pressure (DBP) ≥ 90 mmHg (based on the mean of the second and third recordings for SBP and DBP, respectively) or on antihypertensive medication. Self-reported data included pre-existing conditions, physical activity, smoking, alcohol consumption, COVID-19 testing, and use of contraception in women. Overall, 47.3% of screened participants had hypertension. Of those with hypertension, 70.1% were aware of their condition and 67.0% were on antihypertensive medication. About half (49.3%) of participants on antihypertensive medication had controlled BP (<140/90 mmHg). On average, BP was higher in those on antihypertensive medication and with increasing alcohol intake but lower in those with a history of stroke and those with higher levels of physical activity, previous positive COVID-19 test, and contraception use in women. In Albania, the MMM campaign continues to contribute to the early detection of hypertension among adults. Hence, it constitutes a valuable opportunistic screening instrument among other routine tools applied in the general Albanian population.

Introduction

The prevalence of raised blood pressure (BP) among Albanian individuals aged 18 years and above has been estimated at 32% (29% in women vs. 35% in men).[1] Furthermore, hypertension awareness has been reported to be low (48% uncontrolled and further 11% undiagnosed/unaware) in the Albanian general population.[2] According to the most recent estimates, high systolic blood pressure (SBP) constituted one-third of all-cause mortality in the Albanian population in 2019 and almost one-fifth of the overall disability-adjusted life years (DALYs).[3] In addition, cardiovascular diseases

*Corresponding author. Tel: +355674077260,
Email: genc.burazeri@maastrichtuniversity.nl

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

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
11 788	5580 (47.3%)	3912 (70.1%)	3739 (67%)	1843 (49.3%)	1842 (33.0%)

comprised 57% of mortality and 29% of the overall burden of disease in Albania in 2019.[3] In particular, ischaemic heart disease accounted for 27% of overall mortality and 13% of the overall DALYs, whereas stroke was responsible for 25% of deaths and 12% of the overall burden of disease in the Albanian population in 2019.[3]

Albania joined the May Measurement Month (MMM) initiative for the first time in 2017 and subsequently participated in the 2018 and 2019 campaigns. The prevalence of hypertension among participants of MMM19 campaign was 39% of whom 65% showed awareness.[4] Furthermore, less than half (48.3%) of participants on antihypertensive medication had controlled BP.[4] In 2020, MMM was suspended in Albania, similar to most of the countries worldwide, due to social distancing and transmission issues related to the COVID-19 pandemic.

This article describes the MMM 2021 campaign, which was the fourth time this annual hypertension screening campaign was conducted in Albania, a Mediterranean country in southeastern Europe.

Methods

Similar to previous years, there were two coordinators for the MMM21 campaign in Albania (G.Q. and G.B.), both affiliated with the University of Medicine in Tirana.

Ethical clearance for the MMM campaigns in Albania has been provided by the Scientific Council of the National Institute of Public Health since November 2017.[4]

Thirty-two sites from 30 districts were included in the MMM21 campaign: 3 sites in Tirana district (the capital) and 1 site in each of the following districts: Berat, Delvine, Diber, Durres, Elbasan, Fier, Gramsh, Gjirokaster, Has, Erseke, Korçe, Kruje, Kucove, Kukes, Kurbin, Lezhe, Librazhd, Lushnje, Malesi e Madhe, Mallakaster, Burrel, Mirdite, Permet, Pogradec, Puke, Shkoder, Skrapar, Tropoje, and Vlore.

Overall, there were 52 investigators involved in the MMM campaign conducted in Albania in 2021, who were health promotion specialists working at local healthcare units from all sites included in the campaign, as well as some public health specialists from the National Institute of Public Health. All investigators were trained on 22 September 2021. By the end of September 2021, the online questionnaire was piloted in all screening sites prior to the screening implementation which started on 28 September 2021, to coincide with World Heart Day.

The MMM21 in Albania was supported by the National Institute of Public Health and the Faculty of Medicine in Tirana. Similar to previous years, participants were recruited through social media (Facebook) and by a strong advocacy exerted by the health promotion specialists and volunteers at a community level at all screening sites who, as per previous campaigns, emphasized the importance of BP screening and the unique opportunity to participate in the MMM campaign.[4] The campaign was conducted during the period 28 September to 30 November 2021, with the usual May screening extended to allow flexibility due to the COVID-19 pandemic.

Omron sphygmomanometer devices (model M3, Omron Healthcare, Kyoto, Japan), which are automatic upper arm BP monitors donated by Omron Healthcare for use in the MMM project,[4] were employed in all screening sites for measurement of SBP and diastolic BP (DBP). All participants underwent three seated recordings of their SBP and DBP measured at 1 min intervals, from either the right or the left arm, according to the MMM 2021 protocol.[5]

Overall, 84% of the campaign sites were indoors, whereas the remaining 16% were outdoors.

Hypertension was defined as SBP $\geq$ 140 mmHg or DBP $\geq$ 90 mmHg (based on the mean of the second and third BP recordings) or a subject on treatment for hypertension.[5] Previous myocardial infarction and/or stroke, presence of diabetes, smoking status, and alcohol intake were all self-reported. In addition, new information was collected during this MMM round in Albania including self-reported physical activity, previous COVID-19 test and/or vaccination, and (in women only) use of hormone replacement therapy (HRT) or hormonal contraception.

Data collection was conducted mainly via the MMM application and only a small number in hard copy forms which were subsequently entered into the MMM application. The central MMM project team cleaned the data that had been entered directly into the MMM application and undertook data analysis. Multiple imputation was performed to impute the mean of readings two and three where this was missing.[5]

Results

A total of 11 788 participants aged $\geq$18 years (about 63% women; overall mean age: 49.7 $\pm$ 14.9 years) were included in the MMM21 screening campaign in Albania. About 93% of participants were ethnic Albanians (Caucasians).

Overall, 3739 (31.7%) of participants were on antihypertensive treatment, 40% of individuals ($n = 4696$) had not had their BP measured in the past year, 415 (3.5%) had a previous myocardial infarction, 252 (2.1%) had a previous stroke, 1328 (11.3%) had diabetes, 2253 (19.1%) used aspirin and 1435 (12.2%) used statins, 4394 (37.3%) had previously had a positive COVID-19 test, and 9041 (76.7%) participants had received 1 or more COVID-19 vaccinations (data not shown).

Of all 11 788 participants, 5580 (47.3%) had hypertension (*Table 1*), of whom 3739 (67.0%) were on antihypertensive medication, whereas the remaining participants were not receiving any medications. Of 5580 participants with hypertension, 70.1% were aware. Of 3739 participants on antihypertensive medication, 49.3% had controlled BP (<140/90 mmHg). Of all 5580 participants with hypertension, 33.0% had controlled BP (*Table 1*).

After age and sex adjustment, both SBP and DBP were higher in those on antihypertensive medication

(2.8/2.6 mmHg higher, $P < 0.05$). In those with a previous stroke, BP was lower (4.6/3.0 lower; $P = 0.008$). Furthermore, smoking and diabetes were positively related to high SBP only (1.5 higher, $P = 0.023$, and 1.5 higher, $P = 0.018$, respectively). Conversely, high BP was inversely related to physical activity (5.0/1.6 lower, $P < 0.001$), previous positive COVID-19 test (3.5/1.3 lower, $P < 0.001$), and contraception use in women (11.8/4.1 lower, $P < 0.001$).

Discussion

The MMM21 screening campaign in Albania revealed a high percentage of participants with hypertension (47.3%), about 70% of hypertensive individuals were aware of their condition, and about half (49.3%) of participants on antihypertensive medication had controlled BP.

The percentage of participants identified with hypertension in the MMM21 campaign in Albania (47.3%) was higher than in the previous rounds (38.6% in 2019 and 37.2% in 2018),[4] whereas the proportion of awareness among hypertensive cases and/or the proportion of controlled BP among treated cases was similar to the previous round.[4]

Of note, the non-probabilistic sampling does not allow for the direct comparison between different MMM campaigns, as well as extrapolation of the MMM findings to the overall adult population of Albania. Nonetheless, the MMM campaigns keep contributing to early detection of hypertension in Albania, especially among young adults.[4]

Therefore, the MMM screening campaign constitutes a valuable screening instrument among other routine tools applied in the general Albanian population.

Acknowledgements

The authors acknowledge the local investigators and volunteers: Romina Hala, Entela Neziri, Aulona Zotaj, Boris Miska, Andis Karagjozi, Fatjona Elezaj, Valentina Bashkurti, Mimoza Duma, Anila Gjolaj, Lumnije Kuci, Vjolsida Ballabani, Mirela Ndoi, Flora Dodaj, Erjona Mata, Elena Konakciu, Artana Hatellari, Mirela Vata, Helga Kongoli, Klodi Kananllari, Marsida Koci, Sonila Miraka, Entela Sulo, Ilda Duro, Ermald Meko, Eriona Prifti, Ilda jaho, Enerta Habipaj, Nevila Myftiu, Klara Dhame, Liljana Shkembi, Florenca Methoxha, Vjola Tanaka, Sebastjan Davidhi, Adela Agolli, Orgesa Zani, Ornela Vehipi, Klara Proko, Liri Jano, Floreta Nelaj, Kristina Bahoja, Alma Mullai, Irena Gjoni, Marsilda Bardulla, Trina Hodaj, Arben Xhebexhia, Festime Mjeshtri, Margarita Muka, Ilba Caka, Anxhela Luzi, Marinela Kacorri, Elina Mukaj, and Elgerta Stafa.

Funding

The MMM21campaign in Albania was supported by the following organizations: the MMM project (sphygmomanometers), the National Institute of Public Health in Albania, and the Faculty of Medicine in Tirana.

Conflict of interest: none declared.

Data availability

The data underlying this article are available upon request.

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