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Nation-wide hypertension screening in Italy: data from May Measurements Month 2017—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 organized by the International Society of Hypertension aimed at raising awareness of high BP and to act as a temporary solution to the lack of screening programs worldwide. A similar approach has been used in Italy since 2012, showing inadequate awareness of the consequences of hypertension, a generally increased cardiovascular risk and unsatisfactory BP control in 36% of interviewed individuals. An opportunistic cross-sectional survey of volunteers aged $\geq$18 was carried out in May 2017, during the joint MMM and World Hypertension Day events. Blood pressure measurement, the definition of hypertension and statistical analysis followed the standard MMM protocol. Screenings were conducted both in cities and villages, indoor and outdoor, by health personnel. Eighty-five sites, involving approximately 300 investigators, took part in MMM17/World Hypertension Day in Italy, screening 10 076 individuals during a month-long period. After multiple imputation, 3099 participants were found (30.8%) to have high BP levels. This was the biggest opportunistic BP screening in a single time-point ever reported in Italy. A significant proportion of individuals had high BP, although it was not possible to differentiate between known treated hypertensive patients with inadequate BP control and as yet undiagnosed hypertensive individuals. Opportunistic screening can reach a significant number of individuals, being a powerful tool for raising awareness and carrying out BP screening.

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Introduction

Atherosclerosis-related cardiovascular diseases (CVD) represent a burden on western countries' health systems. In spite of the many efforts towards primary and secondary prevention, CVDs prevalence is constantly increasing, partly because of unhealthy lifestyle and partly because of the improvements of acute coronary syndromes therapy, which has led to a decrease in the mortality due to coronary events at the cost of a growing number of individuals who live with a damaged heart.[1] At the moment, CVDs remain the main cause of premature death in Europe and one of the most important causes of disability.

The scientific community and the World Health Organisation (WHO) jointly identify primary prevention, and specifically the correction of modifiable risk factors, as the key step towards the goal of CVDs reduction.[2,3] Among all, arterial hypertension, known as the "silent killer", is the most important independent risk factor for CVDs.[4]

Reported HT prevalence in Italy ranges from 55% to 59% of the whole population >18 years of age,[5] with a worrisome rate of 11% in the 18–35 years age range.[6] Moreover, data collected in Italy during the 2014 World Hypertension Day, promoted by the International Society of Hypertension, the World Hypertension League and the Italian Society of Hypertension, showed that individuals are aware of healthy life habits useful to reduce blood pressure (BP) but are not equally aware of the risks linked with hypertension.[7] As a consequence, they may lack motivation in following healthy lifestyle changes and medical prescription. Thus, we believe that large-scale health campaigns 'in the field' may play a pivotal role not only in screening and assessment of the BP situation at a given time point, but also in educating people regarding the risks and consequences connected to high BP, thus improving adherence to lifestyle modification and medical prescription.

By being part of the May Measurement Month (MMM17) project organized by the International Society of Hypertension, we were able to increase the number of days of data collection, thus reaching more people and involving more health personnel than ever before.

Methods

MMM17 activities in Italy were coordinated by G.P. with the help of C.T. and with the support of the Italian Society of Hypertension. Informed consent was obtained for each participant onsite. No personal information was requested, as all forms were anonymous.

During the month of May 2017, 85 sites in Italy operated for a different number of days (from 1 to 10 days depending on the site), interviewing and measuring the BP of individuals aged 18 and over who decided to stop by. A total estimated number of 300 volunteers were involved in the campaign.

Blood pressure measuring stations were available inside hospitals and at crossroads, with the logistical support of the Italian Red Cross, both in cities and villages. Also, thanks to the support of Italian Navy, BP measurements were available for people visiting the sail training ship 'Amerigo Vespucci' in a number of ports where this historical and world-famous ship made scheduled calls along the peninsula. The initiative was also supported by national government agencies, with many politicians agreeing to take part in this initiative and have their BP measured.

All the staff had a certain degree of training in health care and received specific training on BP measurements. Either doctors, nurses, paramedics and medical students performed the BP recordings and administered an *ad hoc* created questionnaire. Additionally, outdoor measurements were performed in gazebos, in order to keep the ambient temperature controlled and even, and to allow seated rest before the measurement. All selected devices had been validated accordingly to the ESH-IP approach and BP measurements were performed according to the European Society of Hypertension/European Society of Cardiology (ESH/ESC) 2013 guidelines. Briefly, three consecutive measurements were collected in the sitting position, at rest with back and arm supported, after a 5-min rest. Hypertension was defined as BP ≥140/90 mmHg and/or taking antihypertensive medication.

The study was bottom funded, i.e. each centre which decided to take part in the activity printed its own questionnaires and BP forms and then sent the hard copies to the core lab for data entry. Data were checked and cleaned locally by E.M. and A.F. and analysed by the MMM team according to the standard analysis plan.

Results

A total of 10 076 people were screened during the month of May 2017.

Of these 10 076 individuals, 4959 (49.2%) were females. Mean age (± standard deviation) was 53.7 years (±17.9 years). Blood pressure results across the three readings are shown in *Table 1*, showing a decline from the first, to second, to third readings.

For BP analysis, the mean of the second and third measurements were used (available in 10 014 individuals). The mean systolic BP was 129.7 mmHg, and mean diastolic BP was 78.1 mmHg. After imputation, a mean reading was available for 10 075 individuals. The total number with hypertension was 3099, representing 30.8% of the total.

Discussion

There is great awareness in the Italian scientific community and among officers of the Italian Health Care System about the hypertension problem, with the Italian Society of Hypertension being very active in educational campaigns and large-scale data collection. During the last few years, a yearly event focused on subjects' education on hypertension among the Italian population and on BP measurements was organized, gaining progressively more and more attention and involving an increasing number of people.[6–8]

The present cross-sectional survey provides a contemporary update on BP values collected nation-wide from a remarkable sample of the Italian population. As described, a proportion of 30.8% of the screened individuals were found

Table 1 Blood pressure results across each reading

	Reading 1	Reading 2	Reading 3	Mean of readings 2 and 3
Mean systolic blood pressure (mmHg)	131.7	130.2	128.7	129.7
Mean diastolic blood pressure (mmHg)	78.6	78.2	77.6	78.1
Note: number of individuals with all three readings available	Total number of subjects with three readings: 10 007			

to be hypertensive, a percentage slightly less than the one reported by Torlasco *et al.*[8] in a similar previous campaign (36% among a sample of 8657 individuals, focusing on data collected in year 2015 in a similar fashion). Similarly, the mean BP values of the current sample are similar to those that were reported by Tocci *et al.*[5] from 2004 to 2010 (131/79 ± 19/11 mmHg) and by Torlasco *et al.*[8] in 2015 (133/80 ± 18/10 mmHg).

Unfortunately, the available data do not allow differentiation between known treated hypertensive patients with inadequate BP control and yet undiagnosed hypertensive people. Moreover, the current lack of recommended BP thresholds and targets for BP values obtained in the frame of this 'street epidemiology' campaign, based on such a peculiar type of out-of-office BP measurement technique, makes it unclear how to properly interpret the data collected. Nevertheless, based on extrapolation from previous surveys, we believe that these results highlight a still unsatisfactory BP control in a large sample of the Italian population, which needs to be adequately dealt with, although a trend towards an improvement over the years seems to become apparent.

Joining the MMM Campaign, we have been able to interview the largest number of people approached in a single time point so far, also measuring their BP in a carefully standardized manner. The results we have obtained support the belief that population-based campaigns provide a significant contribution to spread awareness, stimulate curiosity and collect data in large numbers of individuals over a relatively short time window. Moreover, the results obtained in this and in previous campaigns demonstrate how this kind of population screening might be useful to reach specific subgroups in a population, e.g. the young adults, which are usually healthy and rarely feel the need to engage in primary prevention focusing on risk factors and subclinical conditions, also because of their limited interactions with general practitioners resulting, among other problems, in having BP measured very rarely.

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