



## Hypertension diagnosis and control in Italy. Combining forces in the same direction

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High blood pressure (BP) is the worldwide leading modifiable risk factor for cardiovascular (CV) disease and mortality. It is estimated that about 10 million annual deaths are attributable to high BP levels [1].

Lifestyle interventions and pharmacological treatment are, to date, the most effective preventive strategies to reduce blood pressure below thresholds associated with increased risk of CV events. Despite this, more than two-thirds of hypertensive individuals fail to achieve this objective, either because they are not aware of their hypertensive status (lack of awareness) or because their BP levels remains high despite anti-hypertensive treatment (lack of control). In a recent analysis of various nationally representative surveys, BP control rates were unacceptably low worldwide, being approximately 25%. Accordingly, only one of four hypertensive subjects is effectively protected from the risk of developing future CV disease [2].

Reasons of such failure are heterogeneous. Implementation of lifestyle interventions and pharmacological treatments require combined approaches both at the population and the individual level. At the population level, healthcare national systems are challenged to tackle barriers to effective CV prevention programs and to monitor results. Nationwide screening campaigns raising awareness on the importance to measure BP, global accessibility of anti-hypertensive medications, and harmonization in healthcare delivery by general practitioners and hypertension specialists, to optimize

up-to-date strategies for hypertension diagnosis and management into clinical practice, could be viewed as three among the most important interventions that could effectively result in a better hypertension control.

In Italy, hypertension control rates were found to be slightly better as compared to worldwide average. Annual screening campaigns are promoted by the Italian Society of Hypertension and usually take place the 17<sup>th</sup> May of each year, during the World Hypertension Day. Through its nationwide network of more than 130 centers and outpatient clinics, free-of-charge BP measurements, according to an accurate measurement protocol, as suggested by recent guidelines, [3] and information on healthy lifestyle are offered throughout the day to individuals from general population who wish to undergo BP readings in public spaces, pharmacies, in-hospital, or outpatient clinics. A comprehensive analysis of data collected during screening campaigns performed over the last 20 years showed that BP control rate among hypertensive subjects, including those who were unaware of their hypertensive status, was about 34%, with a significant improving trend over time (31% in the 2004–2010 years, 34% in the 2011–2012 years, 37% in the 2013–2015 years) [4, 5].

Interestingly, in one of the most recent reports collected during the 2021 World Hypertension Day, the percentage of individuals who did not undergo BP measurement during the previous month was relatively high, being about 27% of all patients aware of their hypertensive status and treated with anti-hypertensive drugs. Notably, the authors found that women were less likely to have their BP measured during the last month compared to men [6].

Data from electronic healthcare records from general practitioners showed slightly better results, reporting BP control rates between 55 and 60%. However, such proportion referred to the number of patients who already received a diagnosis of hypertension and, by definition, subjects unaware of their current hypertensive status were excluded [7].

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Overall, these results demonstrate that further actions are needed to improve hypertension diagnosis and management at any level. They also reinforce the belief that collection of comprehensive and updated epidemiological data on hypertension prevalence and control rates is a first important step to address whether healthcare strategies do effectively produce results.

In the recent issue of the *Internal and Emergency Medicine* journal, Romano et al. [8] offer a broader, comprehensive, and updated perspective on hypertension prevalence and control in the urban area of the Verona province, in the North of Italy, using retrospective data from electronic medical records collected by 150 general practitioners of 228,406 patients evaluated between 2016 and 2017. Considering the number of residents, this large database is representative of about one quarter of the overall population living in the Verona province.

Hypertension prevalence was found slightly but significantly lower as compared to global estimates [9], being about 19%, whereas the proportion of individuals with controlled BP were in line to what expected (32%). The authors also observed that, during the two years of observation, more than a one-third (38%) of patients with a previous diagnosis of hypertension had no BP measurement recorded in the electronic form; therefore, they were unclassifiable among people with controlled or uncontrolled hypertension. Of note, 29% of this population did not receive any anti-hypertensive drug prescription and, presumably, they were initially prescribed only lifestyle interventions.

Another important finding of this study is the number of individuals ( $n = 2559$ ) with uncontrolled resistant hypertension, that is defined by BP values above 140/90 mmHg despite three or more anti-hypertensive drugs at the maximally tolerated dosage, according to the definition proposed by the recently published 2023 ESH guidelines. In the analyzed database, this group of subjects corresponds to the 6% of the hypertensive population and to the 1.1% of the entire population. According to ESH guidelines, they should be referred to hypertension specialists to refine the diagnosis using home and/or ambulatory BP monitoring and exclude pseudo-resistant or secondary forms of hypertension.

Although in the analysis from Romano et al. the prevalence of subjects with uncontrolled resistant hypertension could be overestimated due to lacking data about maximally tolerated dose of anti-hypertensive drugs and also by the lack of information about anti-hypertensive drug classes, it is noteworthy that such population is represented more frequently by females and by individuals with low rate of associated comorbidities, such as previous myocardial infarction, heart failure, or atrial fibrillation.

Taken together, these findings help identifying at least three potential areas of better implementation of guidelines for diagnosis and management of hypertension into

clinical practice. First, the ESH guidelines recommend that BP measurement should always be part of any medical visit even in individuals below 18 years of age. Second, the guidelines reasonably recommend at least a one-year FU visit in hypertensive patients with stable medical conditions and drug treatment. In the case of drug initiation or treatment changes, a shorter time of follow-up is also required. Initially untreated patients fall in this category, they should receive a first follow-up visit at least within 3 months. It should be acknowledged that a follow-up delay greater than 2.7 months after anti-hypertensive treatment intensification resulted in an increased risk of CV events [10]. Third, clinical, either diagnostic or therapeutic, inertia should always be avoided especially in people apparently at lower CV risk, such as women and patients with low prevalence of comorbidities. Patients' and doctor's knowledge, in addition to empowerment on the importance of timely BP monitoring feedback, are of paramount importance in this field, as well as appropriate intervention to remove gender inequalities in the diagnosis and treatment of hypertension and associated cardiovascular risk factors [11].

The analysis from Romano et al. has some inherent limitations, including the previously cited lack of several key information about individual anti-hypertensive treatment. As the authors correctly pointed out, many GPs could not have been familiar with the use of electronic databases, perhaps preferring the traditional paper format to record data. Moreover, many BP measurements could have been taken using home BP monitoring, without having been transmitted to GPs. Despite this, these results highlight that it is time to act to strengthen the level of interaction in the whole healthcare system between GPs and clinical specialists, with the aim to improve hypertension diagnosis and control. The inclusion in the healthcare model of non-physician figures such as nurses or pharmacists, and the development of digital technologies, such as mobile health technologies promoting self-monitoring of BP, in combination with the traditional approach, will certainly bring better results in the next future. Epidemiological large-scale approaches, such as the research conducted by Romano et al., will be therefore of primary importance to provide timely monitoring of results of these interventions.

## Declarations

**Conflict of interest** The authors declare that they have no conflict of interest.

**Human and animal rights statement** This article does not contain any studies with human participants or animals performed by any of the authors.

**Informed consent** For this type of study formal consent is not required.

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