


New Opportunities for Monitoring Blood Pressure Control and Awareness in the Population: Insights from 12-Year Editions of the World Hypertension Day

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It has been widely reported that hypertension prevalence has been continuously and progressively growing during the last decades worldwide, due to ageing of the population, improved survival after cardiovascular events, environmental factors and ameliorated socio-economic condition of the population in large regions of the planet. However, levels of blood pressure (BP) control in treated hypertensive patients have been substantially unchanged for years, ranging between approximately 33–47 % in most European countries [1], despite an improved awareness of the disease. In Italy, analysis of observational studies and clinical surveys performed in various clinical settings during 10-year observational period (2000–2011) showed that only 37 % of treated hypertensive patients achieved the recommended BP targets [2]. According to these reports, in the last few years several interventions have been undertaken at various levels for improving BP control rates in our Country, as well as in other parts of the world. All these educational and clinical interventions shared several common features, mostly the systematic and thorough assessment of the secular trends in prevalence,

awareness, treatment and control of hypertension in the general population and the progressive and extended involvement of general practitioners (and their medical databases) in the clinical management of hypertension. This large amount of data can be used to provide a rough estimation of the burden of hypertension in various Countries in a setting of *real life*.

Among these opportunities, World Hypertension Day (WHD) can be viewed as an useful opportunity for providing interesting insights. WHD is a worldwide initiative of the International Society of Hypertension (ISH) and World Hypertension League (WHL) with the active participation of various international and national societies. This is aimed at focusing population and media attention on the problem of hypertension and the potential life-threatening consequences of uncontrolled hypertension. During these one-day events, open checkpoints are made available to people in public spaces or hospital areas to measure BP levels, verify awareness and control of individual BP, and, finally, evaluate presence or absence of other hypertension-related clinical conditions and risk factors. These consultations are totally free and offered by different professional figures from the health care system, who have been trained in measuring BP levels according to recommendations from international guidelines [3]. This provides a unique opportunity to access to the “man in the street” and obtain *real-life* data on hypertension awareness and control.

Using these findings, for example, we were recently able to investigate hypertension prevalence, awareness and control in a very large sample of more than 10,000 adult individuals, mostly women, who were stratified into three time periods (2004–2010, 2011–2012, and 2013–2014) [4]. During these periods, we observed that hypertension

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prevalence and treatment were substantially unchanged, whereas controlled hypertension in diagnosed and treated patients rose from 50.0 % in 2004–2010 to 55.5 % in 2011–2012 towards 57.6 % in 2013–2014 [4]. At the same time, another analysis was aimed at evaluating hypertension prevalence and control in a large cohort of young individuals screened during the 2014 edition of the WHD,

and assessing the potential correlations with lifestyle attitudes [5]. Data were collected in 13 excellence centers distributed across the whole national territory and referred to about 500 young individuals aged less than 18 years, among whom hypertension prevalence was 11 % [5].

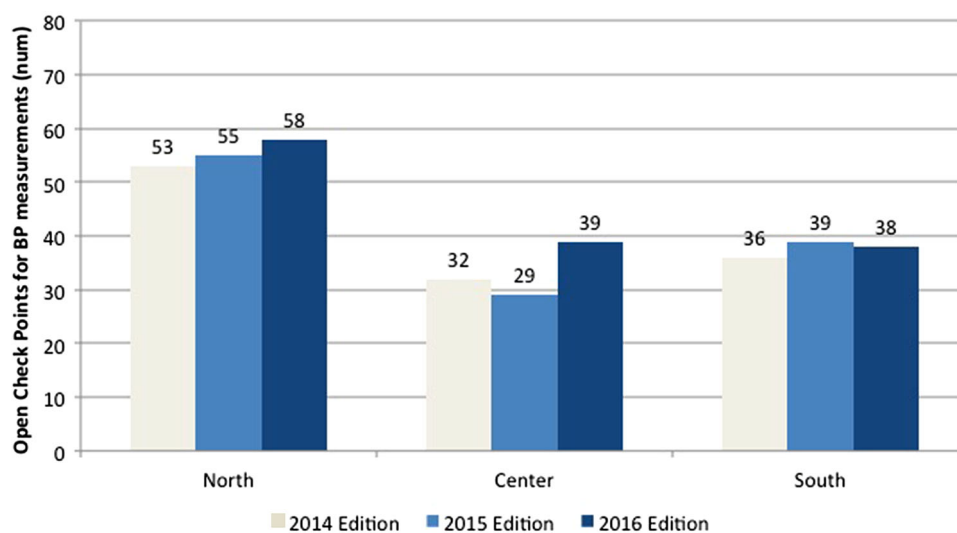
These relevant and updated findings have been obtained with the support of the Italian Society of Hypertension (SIIA), which was very active and deeply involved in the annual organization of the WHD. With this aim, in the last three WHD editions about 380 check-points for BP measurements have been equipped by the Italian Society of Hypertension (SIIA) in collaboration with the Italian Red Cross (CRI) in public spaces or hospital areas. These facilities were distributed throughout the whole national territory, mostly in the northern areas with high-density populations (Table 1), and involved a growing numbers of hypertension centers over the years (Fig. 1). In addition, every year more than 4000 drug stores or pharmacies and more than 150 supermarkets contributed to share specifically designed brochures, leaflets and posters on how is important to know individual BP levels and heart rate in order to prevent major hypertension-related cardiovascular, cerebrovascular and renal complications.

More recently, two other innovations have been developed and shared by our Society with the ambitious aim of improving physicians' clinical management and patients' awareness of hypertension in daily life, respectively. The first tool is represented by a web-based therapeutic algorithm, which has been developed in collaboration with the Italian Drug Agency [*Agenzia Italiana del Farmaco* (AIFA)] and provides web-driven educational support for choosing the most appropriate antihypertensive strategies for individual hypertensive patients according to established recommendations derived from international guidelines [6].

Table 1 Local distribution of hypertension centers from the Italian Society of Hypertension (SIIA) according to three different regions and subsequent editions of the World Hypertension Day in Italy

Regions	2014 Edition	2015 Edition	2016 Edition
Valle d'Aosta	1	4	1
Veneto	6	7	9
Lombardia	29	28	30
Friuli-Venezia-Giulia	4	5	4
Piemonte	9	6	10
Liguria	4	5	4
North	53 (31.9)	55 (33.1)	58 (34.9)
Emilia-Romagna	6	9	10
Abruzzo-Molise	2	4	5
Lazio	14	11	15
Marche	2	1	1
Toscana	7	3	6
Umbria	1	1	2
Center	32 (32.0)	29 (29.0)	39 (39.0)
Campania	16	22	16
Calabria	3	3	1
Puglia	11	8	11
Sardegna	0	1	4
Sicilia	6	5	6
South	36 (31.9)	39 (34.5)	38 (33.6)
Overall	121 (31.9)	123 (32.4)	135 (35.6)

Fig. 1 Distribution of hypertension centers from the Italian Society of Hypertension (SIIA) according to three different macro-areas and subsequent editions of the World Hypertension Day in Italy



This is totally free and fully available on line at the following website <https://www.agenziafarmaco.gov/piattaformaAlgoritmi/index.php/271255/lang-it>, without personal registration or requested fee. The second tool is represented by a specifically designed App for smartphones, which is now able to provide quick information on the following items: (1) hypertension definition, life-style measures and general therapeutic aspects; (2) list of hypertension centers and referring centers for hypertension management and control with contact details and street view; (3) home BP recording and storage. Also this App is available for free at the following website: <https://www.siia.it/dalla-siia-la-prima-app-dedicata-alla-pressione-arteriosa/>.

All these actions have, in our opinion, the common feature of improving awareness on hypertension prevalence and highlighting the potential clinical and socio-economical impact of improved BP control [7]. This improvement in hypertension management and control will lead to a reduced incidence of stroke, coronary heart disease, and congestive heart failure which is difficult to estimate at this time, but will certainly involve several thousand individuals.

Compliance with Ethical Standards

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Conflict of interest Authors have no conflict of interest to disclose with the contents of the present manuscript.

Ethical approval This article does not contain any studies with human participants performed by any of the authors.

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