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Is blood pressure measurement an essential clinical skill?

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| Corresponding Author: | Francesco Paolo Cappuccio, MD MSc FRCP FFPH Warwick Medical School Coventry, UNITED KINGDOM |
| Corresponding Author's Institution: | Warwick Medical School |
| First Author: | Francesco Paolo Cappuccio, MD MSc FRCP FFPH |
| Order of Authors: | Francesco Paolo Cappuccio, MD MSc FRCP FFPH |
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Is blood pressure measurement an essential clinical skill?

Francesco P Cappuccio ^{a,b}

^aUniversity of Warwick, Warwick Medical School, Division of Health Sciences,
Coventry, UK

^bEuropean Society of Hypertension Centre of Excellence, University Hospitals
Coventry & Warwickshire NHS Trust, Coventry, UK

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Correspondence to:

F.P.Cappuccio

University of Warwick, Warwick Medical School

Division of Health Sciences

Gibbet Hill Road

Coventry CV4 7AL

e-mail: f.p.cappuccio@warwick.ac.uk

website: <https://warwick.ac.uk/fac/sci/med/staff/cappuccio/>

Since the National High Blood Pressure Education Program was established in 1972 in the US, consensus and evidence-based guidelines for the prevention, detection, management and control of high blood pressure (hypertension) have been developed in most countries of the world and disseminated to provide up-to-date information to healthcare providers (doctors, nurses, pharmacists, other allied professions), with regular updates to facilitate the translation of new evidence into clinical practice (1).

High blood pressure is the single biggest risk factor making the largest contribution to the global burden of disease, disability and death globally, with the largest burden in low-and-middle-income countries (LMICs) (2-3). However, despite great endeavours over the past decades to improve early detection, effective management strategies and appropriate control of high blood pressure, latest figures from population studies show an unsatisfactory picture. During a global blood pressure screening of 1,508,130 adults carried out in 92 countries in the month of May 2019, a third of those screened never had their blood pressure measured, and 34.0% had hypertension (blood pressure $\geq 140/90$ mmHg) (4). Of those who had hypertension, just over half were aware of their condition, and were taken medications. Furthermore, only a third of those who had hypertension had blood pressure controlled to guidelines targets, whereas 23.2% had either untreated or inadequately treated hypertension. These shortcomings are generally attributed to physicians' inertia, inadequate use of combination therapy (4) or patients' non-adherence to prescribed medications due to pill-burden and comorbidities (5). However, failure to implement correct techniques for measuring blood pressure is a common, though neglected, contributing factor (6-7).

In the last three years we have seen the publication of several updates of hypertension guidelines (8-12). All of them include the fundamental principles on how to measure blood pressure and describe in great detail the different measurements available, namely office, home, ambulatory and automated blood pressure assessments (13). The suspicion that healthcare providers may still use

inadequate methods and procedures to measure blood pressure is therefore of concern, given that an erroneous blood pressure measurement can lead to misdiagnosis, insufficient or unnecessary drug therapy, resulting in unnecessary and avoidable burden of cardiovascular disease (13).

The study by Todkar and coll. (14) is welcome as it systematically appraises the heterogenous literature with a scoping review on whether knowledge, perception and practice of health professionals (doctors, nurses, pharmacists) regarding methods of measuring blood pressure (in the office, at home, with ambulatory or automated devices) are concordant with current guidelines. They identified 72 studies including all four methods of blood pressure assessment. They classified studies as positive or negative for three main concepts - perception, knowledge and practice – using the definitions in published guidelines as reference (8-12). Their analysis concluded that whilst there was an optimal positive perception of the importance of a rigorous standardised methodology for measuring blood pressure, the knowledge was inadequate and the practice unsatisfactory among both doctors and nurses (especially for office blood pressure methods). The study concludes that inadequate blood pressure methods remains a big concern and the lack of implementation of guidelines in clinical practice is disappointing. The authors call for renewed focus on educational programmes including basic training and continuous professional education.

The conclusions are not completely unexpected and they corroborate what happens in the real world (15). Healthcare systems are being stretched more and more as increasing healthcare demand is not being met by chronic limited resources. Furthermore, training of how to measure blood pressure is often delegated to one-off on-line resource, with no direct and practical certification of competency and no regular revalidation in place. Therefore, scenes of blood pressure measurements carried out whilst the patient is not comfortably sitting after a period of rest, with the use of an inappropriate cuff size, without necessary removal of heavy garments, relying on casual single measurements, often reporting readings with digit

preference, are still common in both primary and secondary care busy day-to-day practices (15).

The evidence-based research and the guidelines are compelling in telling us how important it is that blood pressure be taken accurately, whether we seek an office reading or are interested in a more comprehensive assessment requiring day-time and night-time blood pressures. The present study confirms that, by and large, health professionals understand that measuring blood pressure accurately and with standardised procedures is important. Nevertheless, knowledge is scarce and practice is poor too.

Most of the studies reviewed are from Europe, North America and Asia, with little or no studies from LMICs, especially from Africa. Some evidence, however, suggests that poor knowledge and practice of how to measure blood pressure are equally present amongst doctors and nurses in Africa (16). In a Hospital in Nigeria, over 70% of participants had poor level of knowledge (poorer in nurses compared to doctors) (16). Nearly two thirds of the cardiovascular burden of disease due to hypertension is seen in LMICs, including in sub-Saharan Africa (2-3), where the double burden of disease is high. Some evidence suggests that the quality of hypertension guidelines used by African countries could be improved (17). Of 62 African countries recently surveyed, only 26 (42%) offered evidence of formal national guidelines for the detection and management of hypertension (17). Six were stand-alone guidelines, 10 were embedded in guidelines for multiple conditions, ten followed either World Health Organization or other international guidelines. After quality assessment by the Appraisal of Guidelines for Research & Evaluation (AGREE) II instrument, only one was of good quality standard. The study is a stark reminder of the need for improvement in hypertension management in the African continent, of which plans for progress in awareness, training and implementation are integral parts.

In the last few years a collective approach of multiple international health agencies has seen the launches of several initiatives tailored at LMICs to increase

awareness (4), guidance (12), training (18-19) and implementation (19) of hypertension detection, management and control where is most needed. Blood pressure measurement is and will remain an essential clinical skill worldwide (13).

Conflict of interest: FPC is Head of the WHO Collaborating Centre for Nutrition (UNK257) at the University of Warwick

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