

COMMENTARY

Self blood pressure measurement: a promising procedure but some issues remain unanswered

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Journal of Human Hypertension advance online publication, 3 May 2007; doi:10.1038/sj.jhh.1002218

In the current issue of the *Journal of Human Hypertension*, McManus *et al.*¹ assess the frequency of self blood pressure measurement (SBPM) made by or to patients of four general practitioners in Birmingham. An originality of this study was to address BP measurement “without the involvement of a doctor or a nurse”. Nine per cent of the participants reported SBPM and half of them considered using SBPM in the future. The authors considered these findings encouraging because “... self testing has the potential to improve the detection and treatment of [high] BP”, keeping in mind that “this will only be possible if professionals are aware of it”.¹ This paper indirectly raises the distinct issues of the benefits and the pitfalls of SBPM and the relevance of BP measurement performed without the involvement of health professionals.

The ultimate purpose of BP assessment is to obtain valid information on BP level to guide clinical or public health decision. BP measurement has been traditionally performed by trained health professionals in medical settings. However, SBPM, also called ‘home BP monitoring’, is gaining wide interest.^{2,3} Of note, BP readings differ whether measured by a physician or other health professionals (clinical BP measurement (CBPM)), the patients themselves (SBPM) or through readings performed automatically out of the office (ambulatory BP measurement (ABPM)). BP are higher when readings are gathered at the physician’s office as compared to SBPM or ABPM, which partly relates to the so-called ‘white coat effect’^{4–6} and to the decrease of BP with repeated measurements.^{7,8} Moreover, ABPM and SBPM have better reproducibility than CBPM,^{9–11} partly because the former rely on more measurements and because they may have greater validity than CBPM.¹²

Indeed, CBPM, ABPM and SBPM do not convey the same information and are not interchangeable. First, reference values are not the same. Thresholds to define hypertension are lower for ABPM (day: 135/85 mm Hg; night: 120/75 mm Hg) or for SBPM (135/85 mm Hg) than for CBPM (140/90 mm Hg).^{2,9} Second, ABPM¹³ and SBPM^{14,15} predict cardiovascular risk with higher accuracy than CBPM. Third, ABPM and SBPM can identify ‘masked’ hypertension (that is BP that is normal at the office but elevated out of it).

While a broad use of ABPM is somewhat limited owing to some inconvenience incurred to patients¹⁶ and substantial cost of the procedure,³ SBPM is becoming increasingly popular as demonstrated by the large sales of automated BP electronic devices.² Furthermore, SBPM may help long-term adherence to treatment and improve control of hypertension.^{10,17,18}

However, SBPM necessitates some training to the users for proper measurement technique (whether through a health professional and/or the notice supplied with the device). A limitation is that there is no universally accepted protocol for SBPM. Also, patients may report inaccurate BP readings to the physician. Moreover, many devices sold in the market have not been clinically validated. Hence, lack of standardization, lack of training, improper measurement technique and use of non-validated devices are the main pitfalls of SBPM.¹⁹ However, it seems likely that benefits may outweigh pitfalls. SBPM, under medical supervision and in conjunction with measurements of BP at the physician’s office, is recommended by the European Society of Hypertension.²⁰

Are we ready for BP measurements without the involvement of healthcare professionals? Although few data are yet available, it seems that many patients initiate SBPM without consulting health professionals.^{19,20} This raises a number of yet unresolved issues. Studies will have to address the profile of consumers who choose to perform SBPM (in terms of their medical risk, willingness for behaviour change and so on); the role of sale persons in guiding their clients’ choice of a device and in providing them with information on its use; the

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effectiveness of the notice supplied with the devices in adequately informing users about SBPM; the patterns of use of SBPM; and, most importantly, the health-seeking decisions made by SBPM users in response to their BP readings. In the study by McManus *et al.*,¹ no information was available on how BP measurement was performed and which devices were used and it is not possible to evaluate the accuracy of the BP readings. This is an illustration of potential problems with SBPM, since inaccuracy of BP measurement may lead to unnecessary worrying in case of overestimation of actual BP and inadequate reinsurance in case of underestimation.

It was shown that performing SBPM by hypertensive persons was associated with better BP control, which may partly relate to an improvement of adherence to treatment (pharmaceutical or non-pharmaceutical).^{10,17,18} To our knowledge, it is not known whether SBPM could influence lifestyles among non-hypertensive persons (for example, by providing or removing incentives to adopt healthy lifestyles). On the other hand, hypertensive persons performing SBPM without medical supervision could postpone treatment initiation or, if treated, modify their treatment themselves.¹⁷ In the study by McManus *et al.*,¹ no information was obtained on awareness, treatment or control of hypertension among participants.

Measurement of BP has little clinical or public health value if it does not help identify and control hypertension. Current evidence suggests that SBPM may well be a useful additional tool for BP monitoring and for improving BP control among hypertensive patients. In particular, it is likely that SBPM can benefit hypertensive patients when performed in partnership with health professionals, as pointed out by McManus *et al.*¹ However, several questions still need to be addressed to demonstrate that, globally, benefits of SBPM outweigh possible pitfalls.

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