Comparing Blood Pressure Measurement Methods: Differences Depend on Blood Pressure Height

To the Editor:

We welcomed the article from Myers et al.\(^1\) on automated office blood pressure (AOBP) measurement. It is well known that the differences between routine blood pressure (BP) measurements taken by health professionals in daily practice and BP measurements taken by well-trained observers within the framework of scientific studies are impressive. Because of this, routine BP measurement is of limited value. The studies on AOBP open the way in realizing a valid BP measurement in the office. We would like to add a few comments on the data presentation and on the proposed algorithm.

Differences in BP readings between different measurement methods are strongly dependent on the population in which BP measurements are taken. A high mean difference of 20/5 mm Hg between standardized automated measurements and automated measurements with the patient alone in a room was found in patients referred to a specialist for hypertension treatment. A low difference of 3/3 mm Hg was found in an open population. The mean automated BP was 142/80 mm Hg in the first mentioned study by Myers\(^2\) and 115/71 mm Hg in the open population study.\(^3\) In the recent article by Myers et al.,\(^4\) Bland-Altman plots show the differences between manual office BP measurement and the daytime ambulatory BP against their mean (Figure 1A in Reference 1). As one can see in the plots, the differences tend to 0 at normal BP levels and increase with increasing BP, the so-called positive rank correlation. So there is a proportional error indicating that the differences are not normally distributed. Therefore, the data need to be logarithmically transformed to specify the limits of agreement. After back transformation of the data, limits of agreement are percentage-plotted in the original scale. The median difference in systolic BP between office BP measurement and awake ambulatory BP measurement against their mean is then presented as a relative difference (a percentage).\(^4\)

Considering the fact that the difference between manual office BP and awake ambulatory systolic BP tends to 0 in patients with normotension, we only advise an AOBP for those with an elevated routine BP. This would mean that AOBP is not mandatory for every BP measurement but only in case of a manual office BP \(>140/90\) mm Hg.

Disclosures

None.

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Hypertension is available at http://hyper.ahajournals.org

DOI: 10.1161/HYPERTENSIONAHA.110.152926

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