Hypertension Research (2009) 32, 1049–1050

www.nature.com/hr

COMMENTARY

Blood pressure differences by race: the importance of assessing lifestyle

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Hypertension Research (2009) **32,** 1049–1050; doi:10.1038/hr.2009.167; published online 16 October 2009

It is well known that the prevalence of hypertension varies between races and countries. The description of differences both in the prevalence of hypertension and in lifestyles has allowed for the discovery of new risk factors for hypertension. Some of the most important findings in this field have come from the INTERSALT study,[1] a standardized, worldwide epidemiological study with a large sample size that showed a strong link between 24-h sodium excretion and blood pressure (BP) both within and across populations. By adopting a similar approach, studies targeting populations with diverse ethnic backgrounds have the potential to reveal new risk factors. In addition to revealing lifestyle factors, multiethnic studies can reveal genetic differences that are specific to race.

In this issue, Lu *et al.*[2] report that the prevalence of hypertension is higher among non-Han Chinese than among the Han Chinese population, in which the discrepancy was observed consistently across age–sex subgroups. Furthermore, although the average body mass index (BMI) was higher for non-Han Chinese subjects than for their Han Chinese counterparts, adjustment for BMI did not fully explain the difference in hypertension prevalence between the Han and non-Han Chinese. Thus, the authors concluded that race is an important risk factor for hypertension, in addition to age, sex and BMI.

This finding is also similar to that of another study, which investigated whether racial differences in BP are explained by BMI, the prevalence of diabetes mellitus and smoking.[3] In MESA (Multi-Ethnic Study of Atherosclerosis), the prevalence of hypertension was found to be significantly higher among African Americans compared with Whites (60 *vs.* 38%; $P<0.0001$). After adjustment for age, BMI, prevalence of diabetes mellitus and smoking, African Americans showed a significantly higher prevalence of hypertension than did the Whites (odds ratio 2.21; 95% confidence interval: 1.91–2.56). Thus, adjustment for BMI did not fully explain the racial difference in the prevalence of hypertension.

Moreover, another study showed that nondietary factors could not explain differences in BP by region.[4] Zhao *et al.* reported the regional differences in BP, between Northern China and Southern China, in the INTERMAP study. In this study, the differences in age- and sex-adjusted systolic and diastolic BP were 7.55 and 5.11 mm Hg, respectively. Adjustment for BMI explained 36.2% of the difference in systolic BP and 26.5% of the difference in diastolic BP. However, after further adjustment for cardiovascular disease/diabetes diagnosis, special diets, hours of vigorous physical activity, 24-h urinary Na, 24-h urinary K and phosphorus, these factors accounted for 115% of the difference in systolic BP and 76.4% of the difference in diastolic BP. These findings indicate that, to determine whether race/ethnicity is a risk factor for hypertension, it is necessary to fully assess the lifestyles of the subjects. Guidelines for hypertension generally recommend that hypertensive patients limit their sodium intake, consume fruit frequently, adopt a vegetable-rich diet, maintain an optimal BMI, exercise and stop drinking.[5–7] The Japanese Society of Hypertension Guidelines for the Management of Hypertension summarized the expected decreases in BP through lifestyle modifications (Figure 1).[7] These risk factors, namely sodium intake, fruit intake, vegetable-rich diet, obesity, physical activity, and alcohol consumption, might be necessary components in describing lifestyle differences. Unfortunately, as Lu *et al.* mentioned in the description of the study's limitations, although they asked about alcohol consumption in their questionnaire, the incomplete information they collected did not allow them to include this important lifestyle factor in the analysis. Furthermore, they did not assess other lifestyle factors. Thus, this study does not allow us to draw any conclusions on whether non-Han race itself is a risk factor for hypertension or whether the lifestyle of the non-Han Chinese is the risk factor.

In any case, the findings from this study presented the following important facts: (1) the prevalence of hypertension is higher among the non-Han Chinese than among the Han and (2) the non-Han Chinese might have a less healthy lifestyle than the Han Chinese. Thus, education geared toward the prevention of high BP and the promotion of healthier lifestyles is required for non-Han races. Further study is required to describe the discrepancies in lifestyle between the Han and non-Han Chinese. Describing both lifestyles and genetic factors might permit the discovery of new risk factors for high BP and should contribute to the future development of this field.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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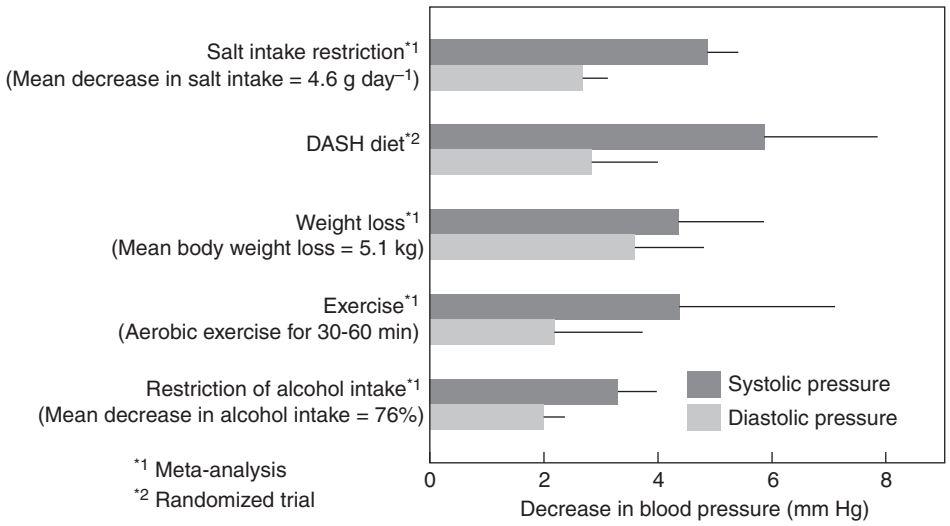

Figure 1 Decreases in blood pressure levels through lifestyle modifications (Figure from the Japanese Society of Hypertension Guidelines for the Management of Hypertension (JSH2009)).

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