

With over a billion people with raised blood pressure, how do we set our priorities straight?



Alta Schutte (1 - left) and Peter Nilsson (2 - right)

(1) ISH President-Elect and ISH Vice President Director, Hypertension in Africa Research Team (HART), North-West University, Potchefstroom, South Africa.

Email: alta.schutte@nwu.ac.za

(2) Professor of Clinical Cardiovascular Research at the Lund University, and senior consultant at the Skane University Hospital, Malmo, Sweden. Email: Peter.Nilsson@med.lu.se

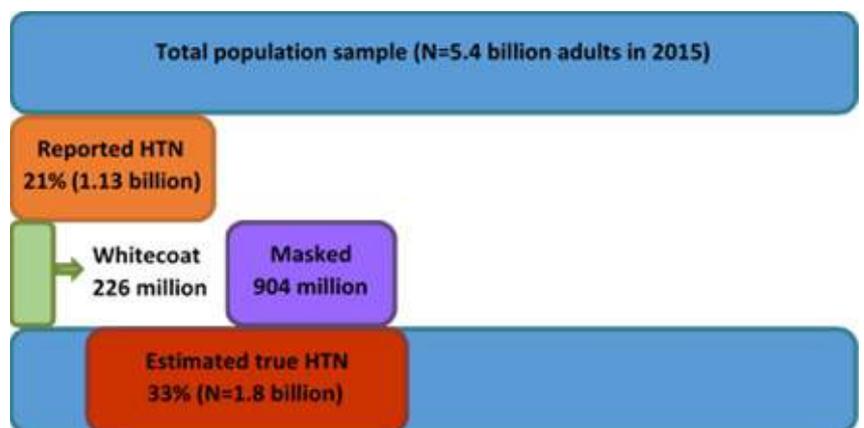
The NCD Risk Factor Collaboration reported recently that 1.13 billion adults had raised blood pressure in 2015.¹ The Global Burden of Disease Study Collaborators compared numerous behavioural, environmental, occupational and metabolic risk factors, and found raised systolic blood pressure to be the largest contributor to global disability-adjusted life-years (DALYs).² These reports raise alarm that the burden of disease is shifting more towards low and middle income countries (LMICs), such as Russia and Sub-Saharan Africa. Nevertheless, a significant chunk of the burden remains in high-income countries.

When trying to get some perspective in the presence of such an overwhelming global health burden, it is important to set our priorities straight.

How will we be able to manage and take control of this massive burden? Is it even possible to eat this elephant?

[1] The ISH has done well in prioritizing a global awareness campaign of hypertension, with ISH President, Neil Poulter, being the driver of the May Measurement Month initiative in 2017 (MMM17).³ This is a very obvious starting point in light of evidence that more than half of persons with hypertension are unaware of it.⁴ The campaign was particularly successful in LMICs where the project was met with great enthusiasm by local healthcare workers and community members, possibly due to the global support and guidance. MMM is likely to continue from strength-to-strength in 2018 and onwards.

[2] The elephant in the room, however, remains the numbers reported in global estimates for raised blood pressure. Epidemiological studies generally report blood pressure figures based on conventional clinic blood pressures. Anyone working in the field of hypertension would know very well that it is not possible for such figures to include the burden of *masked hypertension* – referring to patients with normal blood pressure in the clinic, but with out-of-office hypertension. If we thus firstly wish to have a starting point on the actual scope of the burden of hypertension, we need to at least try to incorporate the reality that hundreds of millions of adults with masked hypertension are not accounted for in these figures. Herewith a simplified attempt, assuming that 20% of the estimated 1.13 billion adults¹ with raised blood pressure had *white-coat* hypertension,⁵ and a conservative 20% of the remaining 4.5 billion adults had *masked* hypertension.⁶⁻⁸ (Bearing in mind that white-coat hypertension does not seem to carry similar risk as true hypertension,⁹ whereas masked hypertension does¹⁰).



The potential implications of these figures are widespread. It not only demonstrates that there is a gross underestimation on the global burden of hypertension of approximately 670 million people (21% vs ~33%), but it should also create a new line of thought in terms of global interventions, the implication for the pharmaceutical industry, and implementing new methodology to detect masked hypertension.

What can be done?

[1] Since effective antihypertensive therapy are cheap and widely available as generics, the challenge remains increasing awareness as already discussed, but *also* detection of masked hypertension. This affects all populations – LMICs but also high income countries. Although the best method to detect masked hypertension is by out-of-office blood pressure measurement, it is impractical to suggest population-wide ambulatory or home blood pressure monitoring. Several authors have described a higher frequency of masked hypertension in certain populations (e.g. prehypertensives, youth, diabetes, renal disease, African ancestry) whereas some have developed a clinic blood pressure index to use in detecting masked hypertension.¹¹ This knowledge should encourage novel initiatives in finding cost effective solutions to detect masked hypertension globally.

[2] In a broader sense, and as highlighted by the Lancet Commission on Hypertension (2016),¹² cardiovascular disease results from a lifetime exposure to cardiovascular risk factors, and thus the development of raised blood pressure should also be viewed in the context of lifetime risk of an entire population from conception onwards. We may urgently need fast-acting solutions to curb hypertension and its consequences, but should not delay better implementation of population-based approaches by creating health-promoting environments. By doing so, we may be able to avoid or delay early vascular aging¹³ on a large scale and thereby improve the whole lifecourse trajectory of cardiovascular risk. This could potentially result in a reduced burden of masked and sustained hypertension. Also, these interventions may have cross-cutting benefits to prevent or delay several non-communicable diseases, such as type 2 diabetes. Counting against these approaches, is the lack of evidence on the effectiveness of population-based interventions (e.g. salt reduction, smoke-free policies, sin taxes) to reduce cardiovascular and all-cause mortality, where the outcome of such trials are eagerly awaited (such as the China Salt Substitute and Stroke Study). Furthermore,

the concept of population-based interventions of low-dose antihypertensive therapy in individuals at intermediate cardiovascular risk remains an option, despite the HOPE-3 trial unable to show no significant benefit in terms of cardiovascular events of blood pressure lowering treatment (in this case an angiotensin-receptor blocker and thiazide).¹⁴ This encourages further trials with different designs and in different populations.

To conclude, we need better tools to detect (masked) hypertension, we need to increase awareness of hypertension, and we need to implement population-based prevention and treatment strategies if we were to make a dent in the global burden of raised blood pressure – and its devastating consequences.

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