

Methodology:

The main problem of the paper is that the means for both anthropometric variables as well as for the Blood Pressure variables differ so strongly between the various study locations. In other words, the variance between the four study groups/locations seems to be much larger than the variance between individuals. As an example, in Group 4 the hypertension prevalence is 50.7%, in group 1 it is 15.8%. It is not clear how the geographic location has been taken into consideration in the multiple regression results of Table 4. In the text it reads (line 200): “using age and tribe specific multiple linear regression models”, but in Table 4 only Age is represented. Is the analysis done with dummy’s for the four groups?

Unclear statements and sentences:

The text is on several places unclear or, at least, requires explanation. For example line 66-67: “Lower income groups ... are at higher risks”. What is the basis for this statement?

Or line 164: what is “mean muscle mass”? Is it somewhere defined in the text ?

Line 170-171: it its not clear what the meaning of this sentence is (or: it is not clear how this is reflected in the Table).

Line 207: “adjustment for confounders”. What adjustment has been made, I mean what are the confounders?

Discussion:

Line 253-255: the sentence is unclear/puzzling: “high prevalence of undernutrition and hypertension ... conform to U shaped association.. ??

A more general point is that existing literature on the subject of this study seems to be insufficiently taken into consideration. There is quite some literature on the nature of the relationships between BMI (or regional adiposity indices) and blood pressure, also when it concerns the lower BMI-range. From existing literature, the general picture is that in the higher BMI range there is a clear positive association between BMI and blood pressure variables, in the lower BMI range such relationship is often absent. When the present report claims that there is, in the lower BMI-range, a negative association, a thorough discussion of literature on this issue should be included. This is not the case. Below I give a few examples of, in my view, relevant references:

References:

Zhengming Chen et al, *Int J Epidem* 35 (2006), 141-150, Body mass index and mortality from ischaemic heart disease in a lean population: 10 year prospective study of 220 000 adult men.

JS Kaufman et al, *Hypertension* 30 (1997) 1511-1516, Relationship between blood pressure and body mass index in lean populations

S Kunutsor et al, *Rural Remote Health* 9 (2009) 1095, Epub 2009 Jun 5; Descriptive epidemiology of blood pressure in a rural adult population in Northern Ghana

NB: also Mungreiphy, cited in the present manuscript, does not report a negative association between hypertension and BMI (in the lower BMI-range).

Note: Anonymous Reviewer