Reviewer's report

Title: Bone health comparison in seven Asian countries using calcaneal ultrasound.

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Reviewer: Kerstin Landin-Wihelmsen

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The authors have performed calcaneal quantitative ultrasound measurements (QUS) on a large sample of men and women in seven Asian countries. The authors found that >50% of some populations had osteoporosis according to a stiffness index/T-score <2.5. The decline in QUS measures varied in different countries.

1. Major comments
The study is based upon a huge population sample. However, a hypothesis and a conclusion based on the results are lacking. The introduction is too long and a specified aim is wanted.

2. Subjects
The measured subjects were walking around in the society and scanned at different places in the community. Hence, the QUS data are based on fairly healthy and young people in the population.

3. Methods
Height and weight and fracture history are lacking. Only reported age is given. Earlier comparative studies have shown that a DXA value of T-score <2.5 according to WHO does not correspond to a similar cut off for a T-score with QUS. A T-score of -3.65 with QUS corresponded to a T-score of -2.5 with DXA. Hence, the cut off level for this study should be changed. Otherwise almost half of the population will be classified as osteoporotic. A history of fractures and other risk factors are also of great importance to be included in the risk evaluation before such information on diagnosis should be given to subjects in the population.

Have the authors themselves performed any comparative studies with QUS versus DXA in Asian subjects?

The definition of osteoporosis according to WHO should be omitted from the text and figure legends as the WHO definition with a T-score <2.5 is based on the DXA device.

4. Results
It is not clear from Figures 4 and 6 if there were any gender differences in QUS. In the text on page 8 and 9 there are very similar figures (50%) having
“osteoporosis” with QUS in men and women above 40 years of age.

Furthermore, the amount of osteoporosis did not increase above the age of 80 as written in the discussion, page 9.

5. Discussion

Most of the discussion is a repetition of data from the results. A more firm conclusion based on the results and to what purpose the study served would have been interesting. The discussion is too long. The statement on page 13 last 2 lines needs a reference. Does osteoporosis have a severe effect on quality of life? Do the authors mean fractures? How do people know that they have osteoporosis? A better validation of the cut off point for the diagnosis osteoporosis and use of the bone devices are needed before people are informed about something they may not have.

6. Minor comments

Abbreviations are given here and there. Please, write out when the wording is used for the first time and the use the abbreviation throughout, for example Stiffness index (SI) on page 5 para 2 line 1, para 3 line 4+5 and para 4 line 1. Broadband ultrasound attenuation (BUA) on page 5 para 2 line 1 and para 3 line 3 and so on. BUA is already explained on page 4. Much of the text is repetetive, page 6 para 2 as well in introduction and discussion.

Level of interest: An article of limited interest

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interest