Author's response to reviews

Title: A Population-based Survey of Low Bone Mass with Well-prepared Quantitative Ultrasound In A Community without Dual-energy X-ray Absorptiometry

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Author's response to reviews: see over
Revised Notes

Subject: MS: 2006333931758317 Screening for low bone mass with quantitative ultrasonography in a community without dual-energy X-ray absorptiometry: population-based survey

To Editor:
[1] The language correction of this manuscript has been performed.
[2] The title of this article has been revised again.

Responses to 1st Reviewer: Dr. Michelle L Frost
[1] Minor essential revisions
1. The aims of the study has been revised:
   (abstract) We screened for low bone mass with quantitative ultrasonography (QUS) in a community without DXA, analyzed its reliability and obtained reference values (to support the hypothesis that low QUS values indicate low BMD) and estimated the prevalence of low QUS values. [P.2]
   (text) The goals of our study were (1) to screen for low bone mass by using QUS in a community without DXA, (2) to conduct a reliability analysis and provide reference QUS values to support the hypothesis that low QUS values indicate low bone mass and (3) to estimate the prevalence of low QUS values. [P.4]

2. The study conclusion has been revised:
   (abstract) Age-related decreases in calcaneal ultrasonometry, which reflected the prevalence of low bone mass, were more obvious in women than in men. [P.3]
   (text) QUS was reliable in this community survey. Age-related decreases in calcaneal ultrasonometric values indicated that low bone mass was more obvious in women than men. The WHO criteria can reasonably be applied to calcaneal QUS when the reference group is selected from the same population as that being screened. [P.16]

Responses to 2nd Reviewer: Dr. Masayuki Iki
[1] Major compulsory revisions
1. The objectives of the study have been revised in abstract(P.2) and text(P.4) as above mentioned.
2. The comparison of QUS survey using different models was limited but accepted.

(P.15, 16) Limitations: Third, unique criteria for QUS screening are not available. Therefore, for international comparison (eg, for epidemiologic review) of QUS surveys, different models are used except the same cutoff values of T-scores.

[2] Other minor revisions
3. Corrected.
4. Preparation of sonographic reference data [P.7]
   [Explain] In the second year (2001), 2% of the younger population aged 20-29 years old in Kinmen were randomly selected. (These targeted young people were invited as our volunteers.) With exclusion of recent fracture history within 12 months, recent amenorrhea for more than 6 months and recent steroid use for more than 3 months, finally we collected 166 healthy subjects (96 males and 70 females, actual sampling rate 1.9% and 1.6% respectively) aged 20-29 (23.2 ±2.1) years-old as the reference group.
5. Exclusion criteria has been stated. [P.8]
   After they excluded subjects with a chronic systemic disorder (including chronic liver disease, chronic renal failure, chronic malabsorptive syndromes, gastrectomy, hyperparathyroidism, Cushing syndrome or long-term steroid use) and those with a fracture within 1 year, repeated visits, incomplete records or failed measurements from calcaneal QUS or anthropometry, 6493 participants were enrolled in our study.
6. Re-written : [P.9,10] Table 3 shows the three categorical distributions of bone mass, as represented by QUS measurements, by age and sex.
8. Table 2 has been re-arranged. The mean and SD of BUA for total population would be necessary for further calculation of annual loss. We would like to preserve that.
9. As above. Two decimal place for BUA is needed for sequent calculation of annual loss. BUA of the reference population divided "/G4ea value " that had 3 decimal place.
10. The regression model has been described more clearly. [P.8]
    Estimated annual losses (percentage per year) were calculated as the regression coefficient, or β value, for the variable age in multiple linear regression divided by the mean of BUA of the reference population. Multiple linear regression, with the dependent variable of BUA and the three independent variables of age, weight and BMI was performed by using a stepwise procedure. Finally, the regression models had three independent variables (age, weight and BMI; all p ≤ 0.01) for the total and male populations and two (age and weight; both p ≤ 0.01) in the female population.