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On epidemiology of fractures and variation with age and ethnicity

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We recently demonstrated differences in fracture incidence by ethnicity in the UK population using the Clinical Practice Research Datalink (CPRD) [1]. In their letter, Harper et al [2] draw attention to the differential age structure of the UK population by ethnicity, and suggest that the lower incidence of fractures in Asian adults over 50 years might reflect the lower proportion of very elderly individuals within this demographic compared with the white population. The relatively small number of fractures within black and South Asian ethnicities meant that presentation of fracture incidence stratified by age band was not feasible. We have thus used a Poisson model to calculate incidence rate ratios (with white ethnicity as the referent), adjusting for age and calendar year to account for any contribution of age distribution and secular change within ethnicity strata. These data are summarised in the table below, and clearly demonstrate that the differences in fracture incidence by ethnicity are congruent with the raw incidence data presented in our paper, with rates highest in whites, intermediate in South Asians and lowest in blacks. In conclusion, whilst there are ethnic differences in age distribution in the UK, these do not explain the differential fracture rates; as discussed in our paper [1], variations in factors such as BMD, bone geometry and

body composition may all contribute. Whatever the underlying cause, we agree with Harper et al that our findings inform the allocation of healthcare resources to those at greatest need.

References

1. Curtis EM, van der Velde R, Moon RJ, van den Bergh JP, Geusens P, de Vries F, van Staa TP, Cooper C, Harvey NC. Epidemiology of fractures in the United Kingdom 1988-2012: Variation with age, sex, geography, ethnicity and socioeconomic status. *Bone*. 2016; 87:19–26. [PubMed: 26968752]
2. Harper D, Brooke-Wavell K, Bogin B. On epidemiology of fractures and variation with age and ethnicity.

Table 1

Incidence of fragility fracture by ethnicity [1], and Incidence Rate Ratios relative to white ethnicity (adjusted for age and calendar year) in UK men and women aged 50 years or over, 1988 to 2012.

<i>Women</i>			
Ethnicity	Number fractures	Rate (/10,000py)	IRR*
White	71081	104.03	Ref
Other	496	70.98	0.81 (0.74, 0.89)
Mixed	77	50.12	0.63 (0.51, 0.79)
South Asian	491	44.46	0.57 (0.52, 0.62)
Black	149	22.26	0.28 (0.24, 0.33)
<i>Men</i>			
Ethnicity	Number fractures	Rate (/10,000py)	IRR*
White	25285	41.74	Ref
Other	170	28.88	0.76 (0.66, 0.89)
South Asian	289	26.85	0.73 (0.65, 0.82)
Mixed	22	17.37	0.49 (0.32, 0.74)
Black	88	15.75	0.42 (0.34, 0.51)

*IRR=Incidence Rate Ratio from Poisson model, adjusting for age and calendar year.