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PO Box 100
1400 Vienna, Austria
fax: +43 1 2600 29302
tel.: +43 1 2600 22417
email: sales.publications@iaea.org
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7.2. REFERENCE DATA AND ASSOCIATED VALUES

Reference data are used to compare the individual to a population. The average values acquired from a DXA scan, such as aBMD, BMC, PCTFM, etc., differ between groups by age, sex and ethnicity. Therefore, there have been many studies to describe a variety of ethnicities for both sexes. For example, Fig. 29 shows total hip aBMD versus age for Hispanic, black and non-Hispanic Caucasians for both males and females living in the United States of America [141]. Care must be used to compare individuals to the reference curves that best match their age, sex and ethnicity if looking for normality. For example, if the aBMD of a black male is compared to the Caucasian male reference curve, the black male would appear to have unusually high aBMD for his age, when in fact the aBMD may be normal when compared to other black men. Much of these differences can be attributed to bone size.

Reference data have two practical purposes for DXA systems: determining fracture risk (T scores) and determining how an individual compares to their peers (Z scores). When determining fracture risk with values such as the T score, it may be appropriate to compare everyone, men and women of different ethnicities, to the same reference curve after adjustments

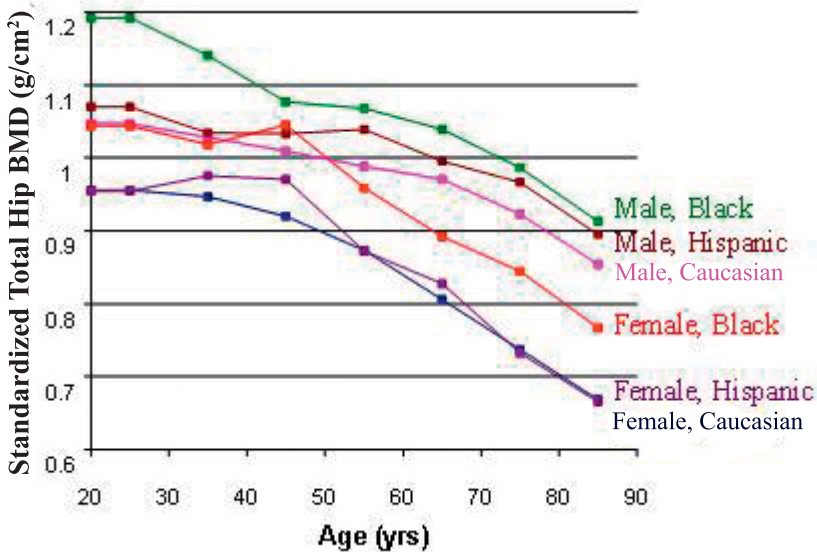


FIG. 29. Hip reference data from the NHANES III Study [141]. aBMD is shown in standardized sBMD units (plot courtesy of J. Shepherd, UCSF).

CONTRIBUTORS TO DRAFTING AND REVIEW

Al-Amiri, H.A.	Kuwait Institute for Scientific Research, Kuwait
Davidsson, L.	International Atomic Energy Agency
Ellis, K.	Baylor College of Medicine, United States of America
Heymsfield, S.	Merck & Co, Inc., United States of America
Hills, A.	Queensland University of Technology, Australia
Le Heron, J.C.	International Atomic Energy Agency
Lohman, T.	Tucson, Arizona, United States of America
McLean, D.	International Atomic Energy Agency
Pettifore, J.M.	University of the Witwatersrand, South Africa
Shepherd, J.	University of California at San Francisco, United States of America
Sherman, M.	University of California at San Francisco, United States of America
Wilson, K.	Hologic, Inc., United States of America

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