



Abstract

Exploring the Impact of Basal Metabolic Rate Equations on Goldberg Cut-Offs: Influence on Estimated Usual Energy Intake in the Elderly [†]

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The accurate assessment of usual dietary intake (DI) in the elderly can be difficult, and its reliability can be affected by several factors, including misreporting, which is one of the major sources of error regardless of the method used. The Goldberg cut-off is commonly used to identify misreporting of DI and includes the ratio of the individuals' reported energy intake (EI) to their estimated basal metabolic rate (BMR), which is then compared to pre-defined cut-offs. BMR can be estimated by applying different equations, considering anthropometric factors or lean body mass (LBM). The literature reports that the use of BMR equations which include LBM are among the most accurate. We aimed to show how applying different BMR equations can affect the parameters in the Goldberg method and further influence the usual EI. The study population was 318 elderly people aged 65–101 years living in different Slovenian nursing homes, who were relatively independent and able to feed themselves, who reported 24 h dietary recall for two non-consecutive days and completed a food frequency questionnaire, and who had an LBM measured with bioelectrical impedance. The usual EI was determined using the Multiple Source Method. A physical activity level (PAL) of 1.2 and 1.5 was applied, based on the expected PAL of participants. A post hoc ANOVA mean difference test using Bonferroni correction showed that differences existed in the mean EI:BMR calculated using different equations. The result of the Harris–Benedict equation, revised by Roza and Shizgal (1984) [1], was significantly different compared to equations which use LBM, while Mifflin et al. (1990) [2] and Porter et al. (2023)'s [3] anthropometric equations showed no significant differences. There were no significant differences between the estimated usual EI calculated based on different equations used in Goldberg cut-offs. The appropriate PAL according to the activity of the study population should be carefully considered, as it might influence the identification of misreporting. Differences were observed in the amount of misreporting between different equations used in the Goldberg cut-off method. Kappa statistics showed that Mifflin et al. (1990)'s [2] equation using anthropometric data had the best agreement with equations that use LBM. We showed that the use of different BMR equations does not impact the estimation of mean usual EI using Goldberg cut-offs; however, it might influence the quartile distribution and subjects' characteristics.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: All participants were fully informed why the research is being conducted and how their data will be used, and consented into study participation, knowing about the ability to withdraw from the study at any time. No risks were identified for study participants. The data presented in this study are available upon request from the corresponding author.

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